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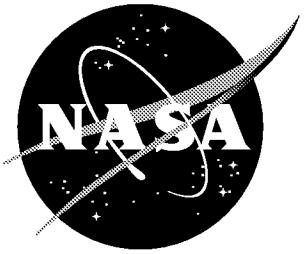

Evaluating the Effectiveness of the 1998–1999 NASA CONNECT Program

Thomas E. Pinelli
Langley Research Center, Hampton, Virginia

Kari Lou Frank
College of William and Mary, Williamsburg, Virginia

Patricia L. House
House and Associates, Virginia Beach, Virginia

September 2000

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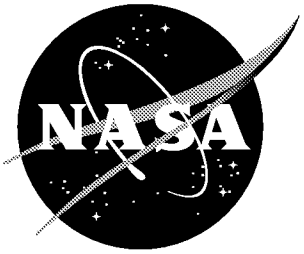

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National Aeronautics and
Space Administration

Langley Research Center
Hampton, Virginia 23681-2199

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Abstract

NASA CONNECT is a standards-based, integrated mathematics, science, and technology series of 30-minute instructional distance learning (satellite and television) programs for students in grades 5–8. Each of the five programs in the 1998–1999 NASA CONNECT series included a lesson, an educator guide, a student activity or experiment, and a web-based component. In March 1999, a mail (self-reported) survey (booklet) was sent to a randomly selected sample of 1,000 NASA CONNECT registrants. A total of 401 surveys (351 usable) were received by the established cut-off date. Most survey questions employed a 5-point Likert-type response scale. Survey topics included (1) instructional technology and teaching, (2) instructional programming and technology in the classroom, (3) the NASA CONNECT program, (4) classroom use of computer technology, and (5) demographics. About 68% of the respondents were female, about 88% identified "classroom teacher" as their present professional duty, about 75% worked in a public school, and about 67% held a master's degree or master's equivalency. Regarding NASA CONNECT, respondents reported that (1) they used the five programs in the 1998–1999 NASA CONNECT series; (2) the stated objectives for each program were met (4.49); (3) the programs were aligned with the national mathematics, science, and technology standards (4.61); (4) program content was developmentally appropriate for grade level (4.25); and (5) the programs in the 1998–1999 NASA CONNECT series enhanced/enriched the teaching of mathematics, science, and technology (4.45).

Introduction

The NASA Langley Research Center's Office of Education (OEd) has the primary responsibility within the Agency for distance learning and the integration of instructional technology. The OEd has developed a suite of five distance learning programs. Collectively, the goals of the five programs include (1) increasing educational excellence; (2) enhancing and enriching the teaching of mathematics, science, and technology; (3) increasing scientific and technological literacy; and (4) communicating the results of NASA discovery, exploration, innovation, and research. All precollege (i.e., grades K–12) distance learning programs (1) support the national mathematics, science, and technology standards; (2) support K–12 systemic change; (3) involve educators in their development, implementation, and evaluation; and (4) are based on alliances and partnerships. A brief description of the five OEd distance learning programs follows.

- **NASA Kids Science News Network (KSNN)** – one-minute vignettes designed to introduce children of all ages to selected mathematics, science, and technology concepts.
- **NASA "Why?" Files** – 60-minute instructional programs designed to introduce children in grades 3–5 to science as inquiry, science processing skills, the scientific method, and problem-based learning.
- **NASA CONNECT** – 30-minute instructional programs, designed for children in grades 5–8, that integrate and demonstrate the application of mathematics, science, and technology in the workplace.

- **NASA LIVE** – 45-minute educational programs that use two-way video conferencing to enhance and enrich high school and college instruction.
- **NASA's Destination Tomorrow** – 30-minute **educational** programs designed to increase the scientific and technological literacy of the adult (lifelong) learner.

Overview of NASA CONNECT

Produced by the Office of Education at the NASA Langley Research Center in Hampton, Virginia, NASA CONNECT is designed to increase scientific literacy, improve the mathematics and science proficiency of upper elementary (grades 4–5) and middle school (grades 6–8) students, and increase the competency of mathematics and science educators. Now in its fourth year of production, the goals of this standards-based, award-winning distance learning program include (1) showing students the application of mathematics, science, and technology on the job; (2) presenting mathematics, science, and technology as disciplines that require creativity, critical thinking, and problem-solving skills; (3) demonstrating the integration of workplace mathematics, science, and technology as a collaborative process; (4) raising student awareness about careers that require mathematics, science, and technology; and (5) overcoming stereotyped beliefs by presenting women and minorities performing challenging engineering and science tasks.

Visit the NASA CONNECT web site at **http://edu.larc.nasa.gov/connect/** for more information. Qualitative and quantitative data collected as part of the 1998–1999 NASA CONNECT evaluation initiative are contained in this report.

The United States Distance Learning Association (USDLA) named NASA CONNECT the "best K–12 distance learning program in the U.S." for 1999 in November at TeleCon West in Anaheim, California. The first-place award was based on the five programs in the 1998–1999 NASA CONNECT series, with emphasis on instructional quality; technical production; and the integration of print, video, and web-based media. Two programs in the 1998–1999 series, *Quieting the Skies* and *Recipes for the Future*, were singled out by the USDLA as exemplary.

Now in its fourth year of production, NASA CONNECT is the oldest program in the NASA K–12 (precollege) distance learning initiative. In addition to the goals listed in the Overview, NASA CONNECT also seeks to create opportunities for parental and community involvement, attempts to link formal education (e.g., the school) with informal education (e.g., libraries, museums, and science centers), and also to link pre-service and in-service education. The NASA CONNECT model is research based, instructional rather than educational, result oriented, learner centered, technology focused, and feedback driven. NASA CONNECT is free to educators; however, educators must register to receive the lesson (teacher) guides. There are four ways to register for NASA CONNECT:

(1) E-mail: connect@edu.larc.nasa.gov
(2) On-line: http://edu.larc.nasa.gov/connect/
(3) Telephone: 757-864-6100
(4) U.S. mail: NASA CONNECT
Mail Stop 400
NASA Langley Research Center
Hampton, VA 23681-2199

The number of teachers registering and the number of students viewing each program must be specified.

Rights and Responsibilities

NASA CONNECT is a U.S. Government program and is not subject to copyright. No fees or licensing agreements are required to use programs in this series. Off-air rights are granted in perpetuity. Educators are granted unlimited rights for duplication, dubbing, broadcasting, cable casting, and web casting into perpetuity, with the understanding that all NASA

CONNECT materials will be used for educational purposes. Neither the broadcast nor the lesson guide may be used, either in whole or in part, for commercial purposes without the expressed written consent of NASA CONNECT.

Production and Delivery

Programs in the 1998–1999 series were live broadcasts that comply with the specifications found in the National Educational Telecommunications Association (NETA) Common-Sense Guide to Technical Excellence. Programs ran 28 minutes and 30 seconds. Programs in the 1998–1999 NASA CONNECT series included E-mail or telephone call-in segments. Each program was broadcast (delivered) via KU- and C-band satellite transmission. Public Television System (PBS) affiliates, statewide television systems such as T-STAR, district wide television systems, and cable access channels carried NASA CONNECT. NASA CONNECT is also web cast via the NASA Learning Technology Channel. The web site has the satellite coordinates and broadcast dates and times.

Availability

For a minimal fee, educators can obtain the NASA CONNECT videos and print materials from the NASA Central Operation of Resources for Educators (CORE).

NASA CORE
15181 State Route 58 South
Oberlin, OH 44074-9799
Phone: (440) 775-1400
Fax: (440) 775-1460
E-mail: nasaco@leeca.esu.k12.oh.us
URL: http://CORE.spacelink.nasa.gov

The Importance of Evaluation

Formative and Summative evaluation is critical to any program's success. As stated in *Educational Technology News*, April 4, 1997, "Teachers, not technology, are responsible that learning takes place in the classroom; technology is only a tool in the learning process." NASA CONNECT is a tool for enhancement/enrichment; the only way to gauge the effectiveness of that tool is to assess how it is being used by classroom teachers. Evaluation is important for numerous reasons. First, evaluation improves the credibility and validity of a program (Wade, 1999). Second, evaluation can be used to make changes in the program (Ramirez, 1999). This evaluation is particularly important because of the dynamism inherent both in education and technology. According to Dr. Lawrence T. Frase, Executive Director of the Research Division of Cognitive and Instructional Science at the Educational Testing Service, "The major issue for educational technology in the next millennium will be the effectiveness of its adaptation to social, scientific, and political change" (*THE Journal*, 2000). Third and finally, evaluation can help determine the effectiveness of a program (Hazari and Schnorr, 1999). Because of the wide array of information that can be reaped from the evaluation process, the Office of Education conducts ongoing quantitative and qualitative assessment of NASA CONNECT.

Methodology

A sample of 1,000 registrants was randomly drawn from the NASA CONNECT database. A (self-reporting) survey/questionnaire was mailed to the sample group in early March 1999. The survey contained 67 questions, 10 of which dealt with demographics (appendix A). Those receiving the survey could select from three options: (1) they could complete the survey and return it, (2) they could write "not applicable" on the survey and return it, and (3) they could ask to receive a free copy of the final assessment report (all individuals who returned a survey received a complimentary educational CD-ROM). The 351 usable surveys were received by the established cut-off date. Additionally, 50 surveys marked "not applicable" were also received by the established cut-off date. Reasons given for not filling out the survey were logged in the database (appendix B). The overall response rate for the 1998–1999 NASA

CONNECT evaluation project was approximately 40 percent.

In addition to the quantitative data collected, the Office of Education also recorded all qualitative data that were received during the 1998–1999 NASA CONNECT season. These comments came from e-mail correspondence with educators, traditional mailings to educators, and phone conversations. Comments were divided into five categories: Positive Feedback (appendix C), Negative Feedback (appendix D), Technical Difficulties (appendix E), Miscellaneous Comments (appendix F), and Tribal School Comments (appendix G). The qualitative data collected were also incorporated into the changes suggested for the 1999–2000 NASA CONNECT season.

Demographics

The evaluation booklet contained a wide variety of demographic questions, the answers to which could be used to establish each respondent's profile, classroom environment, and teacher/student computer use. Demographic findings for survey respondents follow:

- About 68 percent of respondents were female.
- About 37 percent of respondents were located in suburban school districts, 35 percent in rural school districts, and 28 percent in urban school districts.
- About 88 percent of respondents identified "classroom teacher" as their present professional duty.
- About 75 percent of respondents worked in a public school.
- About 67 percent of respondents held a master's degree or master's equivalency.
- About 74 percent of respondents identified themselves as Caucasian.
- The mean and median ages of respondents were 44.9 and 46, respectively.
- The mean and median "years as a professional educator" were 16.3 and 15, respectively.
- About 76 percent of respondents owned a personal computer.
- About 45 percent of respondents indicated membership in a professional (national) mathematics or science educational organization.

Presentation of Data

The survey questions were divided among ten (10) topics. The respondents were asked to react to questions about instructional technology and programming in the classroom and to items specifically related to the NASA CONNECT program series (***Demographics*** data were addressed in the previous section of this report). Findings for the remaining nine topics are presented in this section. The topic results were reported in terms of mean ratings when the survey items involved a 5-point Likert scale and in percentages when the questions required other responses. Each question was calculated by using the number of respondents that answered that particular question (n) rather than from the total population of respondents (N).

Topic 1. Instructional Technology and Teaching

Respondents were asked to rate seven statements related to instructional technology and teaching (table 1). The highest mean rating ($\bar{x} = 4.55$) was given to the statement that instructional technology enables teachers to be more creative. The next highest mean ratings were given to the statements that technology enables teachers to teach more effectively ($\bar{x} = 4.51$), accommodates different learning styles ($\bar{x} = 4.51$), and increases student motivation and enthusiasm for learning

($\bar{x}$ = 4.51). At slightly lower mean ratings, the respondents reported that instructional technology increases student learning and comprehension ($\bar{x}$ = 4.41) and student willingness to discuss content and exchange ideas ($\bar{x}$ = 4.23). The lowest mean rating ($\bar{x}$ = 4.07) was given to the statement that instructional technology is effective with virtually all students.

Topic 2. Instructional Programming and Technology in the Classroom

Instructional Programming

Respondents were asked to react to four statements about instructional technology programs for use in the classroom (table 2). Higher mean ratings were given to the statements that schools have increasingly greater access to instructional technology programs ($\bar{x}$ = 4.25) and that the majority of the programs are of good quality ($\bar{x}$ = 3.86). Lower mean ratings were assigned to the statements that the majority of the programs are *not* easily broken into "teachable" units ($\bar{x}$ = 2.78) and that the majority of the programs are *not* appropriate (for example, too advanced or too basic) for the students ($\bar{x}$ = 2.65).

Instructional Technology

Respondents completing the survey reacted to four statements concerning instructional technology use in the classroom (table 3). Respondents gave the highest mean rating ($\bar{x}$ = 4.13) to statement (1) that administrators support and encourage teachers to use

Table 1. Instructional Technology and Teaching

Question *Instructional technology . . .*	Mean	Median	Standard deviation	Minimum	Maximum	Count (n)
Enables teachers to teach more effectively	4.51	5	0.76	1	5	290
Enables teachers to accommodate different learning styles	4.51	5	0.73	1	5	293
Enables teachers to be more creative	4.55	5	0.74	1	5	293
Increases student learning and comprehension	4.41	5	0.75	2	5	289
Increases student willingness to discuss content/exchange ideas	4.23	4	0.88	1	5	292
Increases student motivation and enthusiasm for learning	4.51	5	0.73	2	5	291
Effective with virtually all types of students	4.07	4	1.05	1	5	287

Table 2. Instructional Programming

Question	Mean	Median	Standard deviation	Minimum	Maximum	Count (n)
Increasingly, schools have greater access to instructional programs	4.25	4	0.85	1	5	290
Most programs of good quality	3.86	4	0.92	1	5	284
Most programs inappropriate (i.e., too advanced or too basic) for my students	2.65	3	1.10	1	5	272
Most programs not easily broken into "teachable" units	2.78	3	1.24	1	5	275

Table 3. Instructional Technology

Question	Mean	Median	Standard deviation	Minimum	Maximum	Count (n)
Administrators support and encourage teachers to use instructional technology in the classroom	4.13	5	1.07	1	5	279
Teachers receive training and technical assistance to support classroom use of instructional technology	3.01	3	1.23	1	5	287
Classrooms are growing increasingly rich in instructional technology	3.60	4	1.09	1	5	289
Teachers are generally positive about introducing/using instructional technology in the classroom	3.37	3	1.02	1	5	288

instructional technology in the classroom and (2) that classrooms are growing increasingly rich in instructional technology ($\bar{x}$ = 3.60). Lower ratings were given to the statements that (1) teachers are generally positive about introducing/using instructional technology in the classroom ($\bar{x}$ = 3.37) and (2) that teachers receive training and technical assistance to support classroom instructional technology use ($\bar{x}$ = 3.01).

Topic 3. Overall Assessment of NASA CONNECT Program

Respondents were asked to assess the five programs in the 1998–1999 NASA CONNECT series (table 4). The highest mean ratings were given to the alignment of program content with the national mathematics and science standards ($\bar{x}$ = 4.61) and the presentation of science as a process requiring creativity, critical thinking, and problem-solving skills ($\bar{x}$ = 4.58). High mean ratings were also given to the programs that met their stated objectives ($\bar{x}$ = 4.49) and presented the application of mathematics and science on the job ($\bar{x}$ = 4.49). The respondents agreed that program content enhanced the teaching of mathematics and science ($\bar{x}$ = 4.45) and raised student awareness of careers requiring mathematics and science ($\bar{x}$ = 4.44). Workplace science was presented as a collaborative process ($\bar{x}$ = 4.42), and the programs were developmentally appropriate for the grade level ($\bar{x}$ = 4.25). The lowest mean rating was given to the ease of integrating the programs into the curriculum ($\bar{x}$ = 4.09).

Topic 4. NASA CONNECT Program Use

Fifty-five percent of respondents (n = 269) indicated that they used the NASA CONNECT programs to introduce a curriculum topic, objective, or skill, while 45 percent did not use the programs for this purpose (fig. 1). Eighty-two respondents did not answer this question.

Seventy-five percent of respondents completing the survey said they used the programs to reinforce a curriculum topic, objective, or skill previously introduced in class. This was the greatest use of the programs, as indicated by respondents to this question (n = 271). Twenty-five percent did not use the programs for this purpose. Eighty respondents did not answer this question.

Seventy percent of respondents (n = 261) indicated that they used the NASA CONNECT programs as special interest topics, while 30 percent did not. Ninety respondents did not answer this question.

Table 4. Overall Assessment of NASA CONNECT Program

Question	Mean	Median	Standard deviation	Minimum	Maximum	Count (n)
Programs met stated objectives	4.49	5	0.66	2	5	270
Program content developmentally appropriate for grade level	4.25	4	0.85	1	5	268
Program content aligned with national mathematics and science standards	4.61	5	0.60	3	5	257
Program content easily integrated into the curriculum	4.09	4	0.90	1	5	267
Program content enhanced teaching of mathematics and science	4.45	5	0.69	2	5	267
Programs raised student awareness about careers requiring mathematics and science	4.44	5	0.68	2	5	262
Programs presented the application of mathematics and science on the job	4.49	5	0.67	2	5	269
Programs presented workplace science as collaborative process	4.42	5	0.69	2	5	267
Programs presented science as a process requiring creativity, critical thinking, and problem-solving skills	4.58	5	0.63	3	5	270

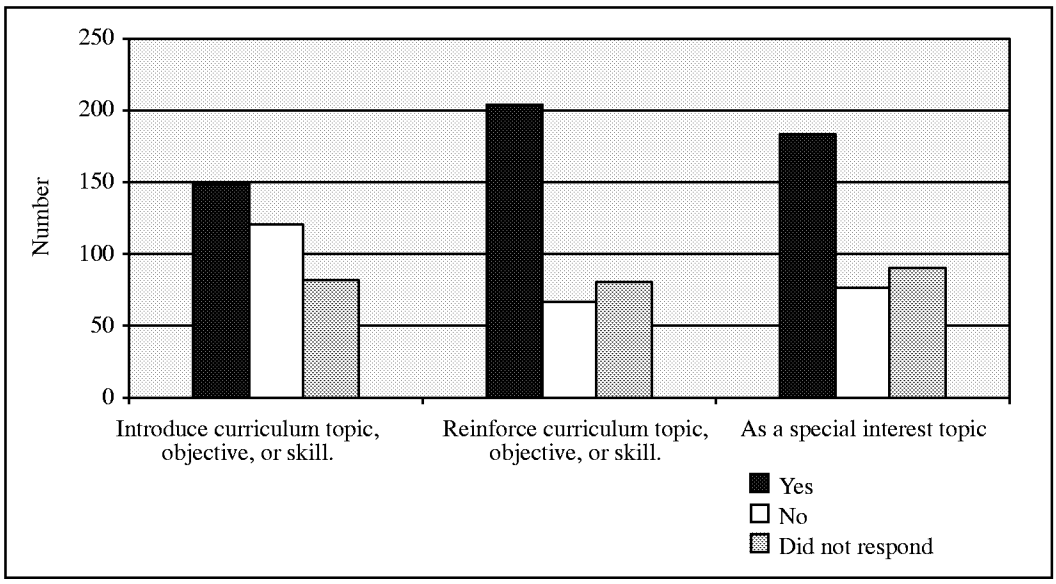

Figure 1. NASA CONNECT program use.

Program Delivery

Seventy-five percent of respondents (n = 251) used tapes of the NASA CONNECT programs. Twenty percent indicated that they viewed the programs both live and on tape, while 5 percent indicated that they viewed only the live programs. One hundred of those returning the survey did not respond to the question.

Grades Viewing NASA CONNECT Program

Respondents were asked to designate the grade levels that viewed the NASA CONNECT programs (fig. 2). Of those that responded (n = 259), fifth (37 percent) and sixth (36 percent) graders were the largest percentage of students viewing the program. Thirty percent of eighth graders watched the programs, while 29 percent of fourth graders and 27 percent of seventh graders viewed the programs. A small percentage of third (7 percent), ninth (3 percent), tenth (3 percent), eleventh (4 percent), and twelfth (5 percent) graders also viewed the programs. Ninety-two respondents did not answer the question.

Topic 5. NASA CONNECT Lesson Guides

Use of Lesson Guides

In response to the question about the NASA CONNECT lesson guide use, 77 percent of those completing the survey (n = 283) indicated that they used the lesson guides. Twenty-three percent said that they did not use the guides. Sixty-eight individuals did not answer this question.

Quality of Lesson Guides

Respondents were asked to react to three statements about the quality of the NASA CONNECT lesson guides (table 5). The statement about the guide being a valuable instructional aid had the highest mean rating ($\bar{x}$ = 4.40), followed by the assessment that the lesson guide layout presented the information clearly and that the information was easy to read ($\bar{x}$ = 4.28). The guide directions/instructions were reported to be easily understood at a lower mean rating ($\bar{x}$ = 4.16).

Topic 6. NASA CONNECT Classroom Activities/Experiments

Use of Classroom Activities/Experiments

The classroom activities/experiments used in the NASA CONNECT programs were reported to have been used by 65 percent of the respondents (n = 291), while 35 percent reported not using the activities. Sixty persons responding to the survey did not answer the question.

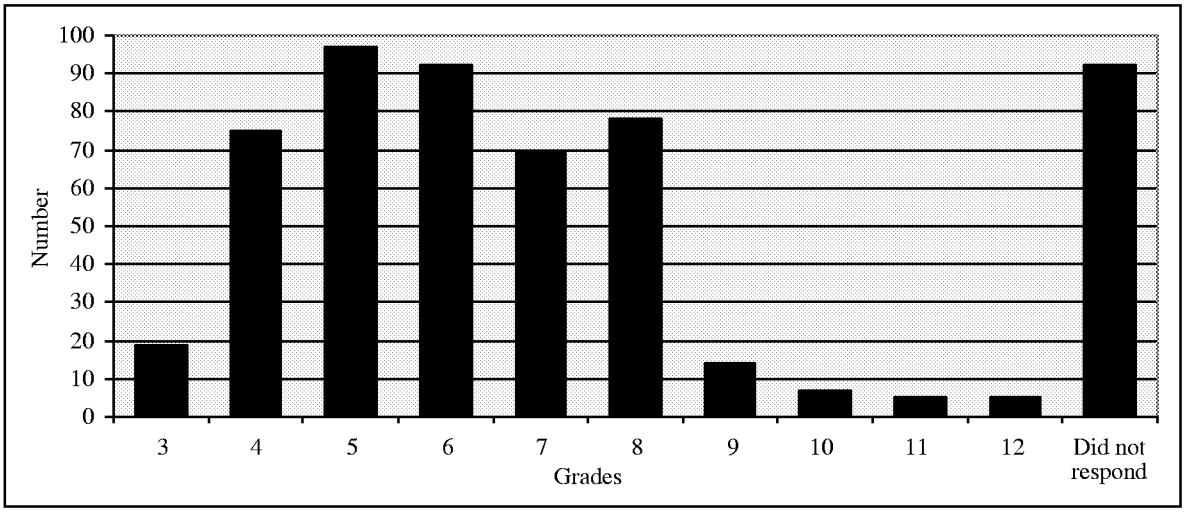

Figure 2. Grades viewing NASA CONNECT programs.

Table 5. Quality of NASA CONNECT Lesson Guides

Question	Mean	Median	Standard deviation	Minimum	Maximum	Count (n)
Directions/instructions in lesson guides were easily understood	4.16	4	0.86	1	5	208
Layout of lesson guides presented information clearly and was easy to read	4.28	4	0.78	1	5	208
Lesson guides were a valuable instructional aid	4.40	5	0.72	2	5	206

Quality of Classroom Activities/Experiments

Respondents were asked to respond to three statements about the program-related classroom activities/experiments (table 6). The quality of the classroom activities/experiments were rated highest as complementing the lesson for each program in the series ($\bar{x}$ = 4.39). The survey answers indicated a higher mean rating for the developmental appropriateness of the activities/experiments for the grade level ($\bar{x}$ = 4.22) than for the ease of implementing the activities and experiments into the classroom lesson plans ($\bar{x}$ = 3.97).

Topic 7. NASA CONNECT Web-Based Activity

Use of Web-Based Activities

Twenty-two percent of respondents (n = 288) reported that they or their students used the NASA CONNECT web-based activities, while 78 percent reported no use of the activities. Sixty-three of those responding to the survey did not answer the question.

Quality of Web-Based Activities

Respondents were asked to react to five statements about the NASA CONNECT programs' web-based activities (table 7). The statement that more on-line activities should be available on the NASA CONNECT web site received the highest mean rating ($\bar{x}$ = 4.72) from the respondents. They reported that the content of the on-line activities enhanced the teaching of mathematics and science ($\bar{x}$ = 4.33) and raised student awareness of careers that require mathematics and science ($\bar{x}$ = 4.33). Those returning the survey rated the ease of integrating the content of the activities into the curriculum ($\bar{x}$ = 3.98) and the developmental appropriateness of the web-based components for the grade level ($\bar{x}$ = 3.92) at lower mean ratings.

Use of NASA Home Connect Program

NASA Home Connect is accessible only to those persons within the viewing audience of television station WVEC in Hampton Roads, Virginia. Eighty percent of those returning the

Table 6. Quality of NASA CONNECT Classroom Activities

Question	Mean	Median	Standard deviation	Minimum	Maximum	Count (n)
Classroom activity (experiment) easily implemented into lesson plan	3.97	4	0.90	1	5	182
Classroom activity (experiment) complemented lesson for each show	4.39	5	0.71	2	5	171
Classroom activity (experiment) developmentally appropriate for grade level	4.22	4	0.83	1	5	180

Table 7. Quality of the NASA CONNECT Web-Based Activities

Question	Mean	Median	Standard deviation	Minimum	Maximum	Count (n)
Programs' web-based components developmentally appropriate for grade level	3.92	4	0.89	2	5	60
Content of on-line activities easily integrated into curriculum	3.98	4	0.94	1	5	59
Content of on-line activities enhanced teaching of mathematics and science	4.33	4	0.71	2	5	58
On-line activities raised student awareness of careers requiring mathematics and science knowledge	4.33	4	0.79	2	5	57
More on-line activities should be available on NASA CONNECT web site	4.72	5	0.52	3	5	61

survey did not respond to the question, 7 percent indicated that they had used the NASA Home Connect program, and 13 percent said they did not use the program.

Topic 8. NASA CONNECT Web Site

Use of the NASA CONNECT Web Site

Fifty percent of those responding to the survey (n = 289) reported that they used the NASA CONNECT web site, and 50 percent said that they did not. Sixty-two respondents did not answer the question.

Quality of NASA CONNECT Web Site

Those surveyed were asked to respond to six statements about the NASA CONNECT web site (table 8). They gave the highest mean ratings to items pertaining to the clear legibility of the web site when viewed on their monitors ($\bar{x}$ = 4.51) and the visual appeal of the web site ($\bar{x}$ = 4.50). They also gave a high rating to the design of the web site, which made the printouts of individual pages legible ($\bar{x}$ = 4.45). Respondents reported that the web site had a good balance between text and graphics

Table 8. Quality of NASA CONNECT Web Site

Question	Mean	Median	Standard deviation	Minimum	Maximum	Count (n)
NASA CONNECT web site visually appealing	4.50	5	0.62	3	5	135
Web site easily navigated	4.34	4	0.77	1	5	134
When viewed on monitor, web site is clearly legible	4.51	5	0.61	3	5	134
Web site design produces legible printouts	4.45	5	0.69	2	5	116
Good balance between text and graphics on web site	4.38	4	0.68	2	5	127
NASA CONNECT web site downloads quickly	3.87	4	1.04	1	5	121

($\bar{x}$ = 4.38) and that the site was easily navigated ($\bar{x}$ = 4.34). Respondents gave the lowest rating to the speed of downloading the web site ($\bar{x}$ = 3.87).

Topic 9. Classroom Environment

Instructional Technology Equipment

Respondents were asked about the availability/location of specific kinds of technology in their classrooms, schools, and homes (fig. 3). A television, a VCR, a video camera, a laser disc player, video editing equipment, and a computer were the items specified. The respondents were asked to mark all that applied.

Television – Two hundred thirty-six respondents reported having a television in their classrooms, 184 reported televisions in their schools, and 220 reported televisions in their homes. Sixty-four respondents did not answer the question.

VCR – Two hundred fifteen respondents reported a VCR in their classrooms, 195 reported VCRs in their schools, and 219 reported VCRs in their homes. Sixty-two respondents did not answer the question.

Video Camera – Forty respondents said they had a video camera in their classrooms, while 208 had video cameras in their schools. One hundred twenty-one respondents had video cameras in their homes. One hundred respondents did not answer the question.

Laser Disc Player – Seventy respondents reported having laser disc players in their classrooms, 138 had laser disc players in their schools, and 25 had laser disc players in their homes. One hundred sixty-two respondents did not answer this question.

Video Editing Equipment – Only 9 respondents answered that they had video editing equipment in their classrooms, 74 had video editing equipment in their schools, and 10 had the equipment in their homes. Two hundred seventy-one respondents did not answer this question.

Computer – Two hundred forty-nine respondents reported having a computer in their classrooms, 208 reported having computers in their schools, and 208 also reported having computers in their homes. Sixty-one respondents did not answer this question.

Computer Accessories

Respondents were asked about the availability/location of specific computer accessories (fig. 4). The accessories were a CD-ROM, a LAN, a district-wide network, and an Internet connection. Respondents were asked to mark all choices that applied.

CD-ROM – Two hundred twenty-four respondents had CD-ROMs in their classrooms, and 193 had CD-ROMs in their schools. One hundred ninety-six respondents had CD-ROMs in their homes. Sixty-six respondents did not answer the question.

LAN – One hundred twenty-seven respondents reported LANs in their classrooms, and 147 reported LANs in their schools. Fifty-seven had LANs in their homes. One hundred fifty-two respondents did not answer the question.

District-Wide Network – One hundred twenty-four respondents reported that their classrooms had district-wide networks, while 129 reported district-wide networks in their schools. Only 29 respondents had district-wide networks in their homes. One hundred seventy-three respondents did not answer the question.

Internet Connection – One hundred seventy-four respondents surveyed had Internet connections in their classrooms, and 185 had Internet connections in their schools. One hundred sixty-eight respondents reported Internet connections in their homes, while 80 respondents did not answer the question.

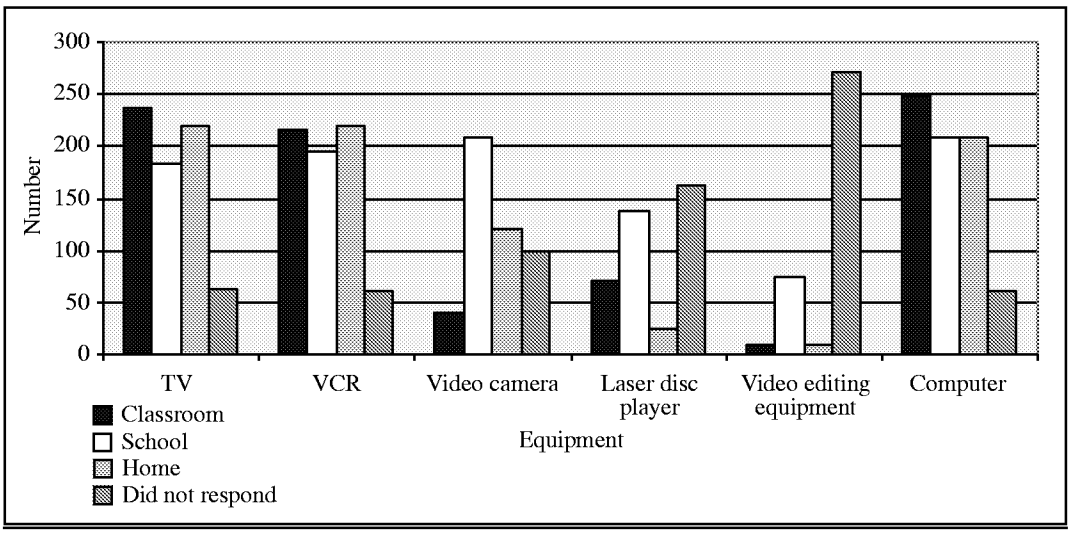

Figure 3. Availability of specific instructional technology.

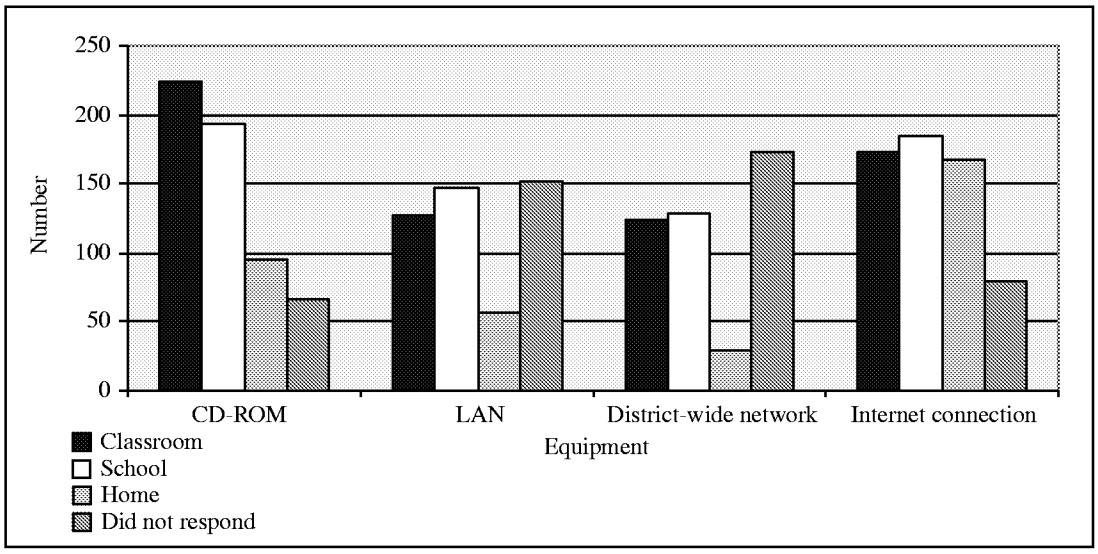

Figure 4. Availability of specific computer accessories.

School Computer Operating System

Survey respondents were asked to identify the type of computer operating system used in their schools (fig. 5). Thirty-four percent of those surveyed (n = 293) reported that their schools used a Macintosh system, while 66 percent reported that their schools used a PC system. Eighty-six respondents did not answer the question.

Student Use of School Computers

Respondents (n = 265) were asked how often a typical student in their schools used a computer during a given month (fig. 6). Twenty-five percent reported student use of a computer 1 to 5 times in a given month, 28 percent reported student use of a computer from 6 to 10 times, and 23 percent reported student use of a computer from 11 to 20 times within a given

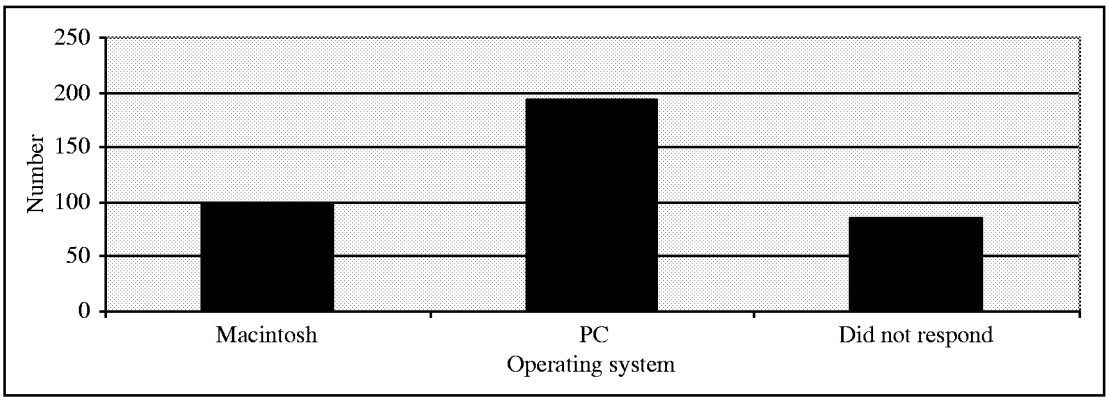

Figure 5. Computer operating systems used in schools.

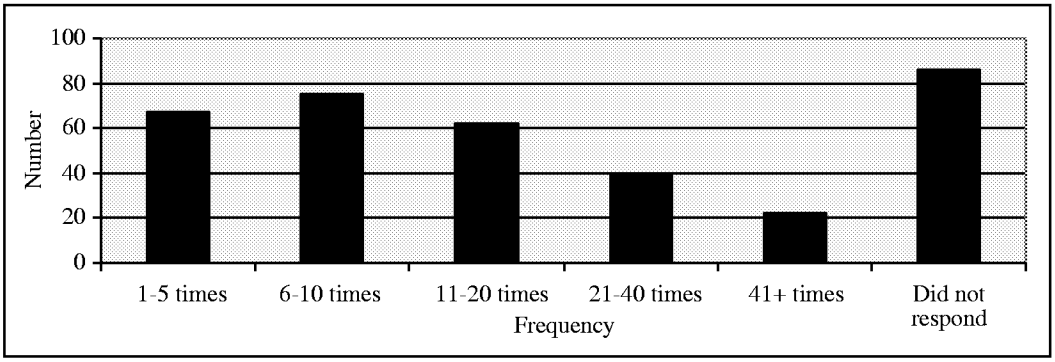

Figure 6. Student use of school computers.

month. Fifteen percent of those surveyed said that a student used a computer in their schools 21 to 40 times in a given month, while 8 percent reported use at 41 or more times within a month. Eighty-one respondents did not answer the question.

Student-to-Computer Ratio

Survey respondents (n = 335) were asked how the students in their school operated computers in the classroom (fig. 7). Forty-two percent responded that students operated computers on a ratio of one student per computer. Thirty-nine percent reported that students worked with computers in pairs. Nineteen percent indicated that students operated the computers in groups (i.e., three or more students per computer). Ninety-six respondents did not answer the question.

Classroom Connection to Internet

Respondents were asked to indicate how the computers in their classrooms are connected to the Internet (fig. 8). Sixteen percent reported that a 28.8 modem was used, 12 percent indicated that a 56-K modem was used, and 16 percent reported the use of a cable modem. Twenty-one percent said that a T-1 line was used, 27 percent said that their classrooms did not have a connection, and 8 percent said they did not know about their classroom connections. One hundred twenty-nine respondents did not answer the question.

Purposes of Student Computer Use

Survey respondents were given 10 purposes for student computer use and were asked to mark all that applied (fig. 9). Two hundred twenty-seven selected **finding out about ideas**

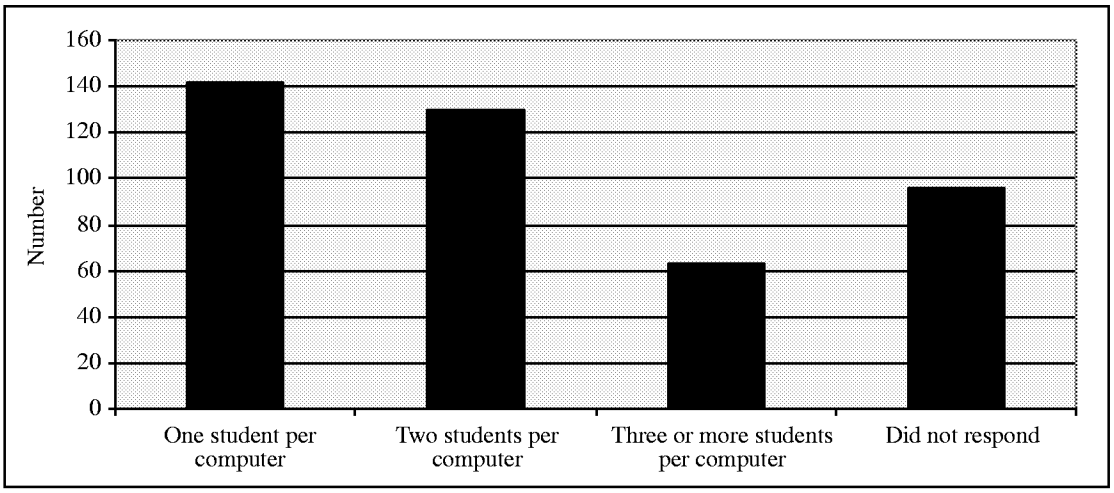

Figure 7. Student-to-computer ratio.

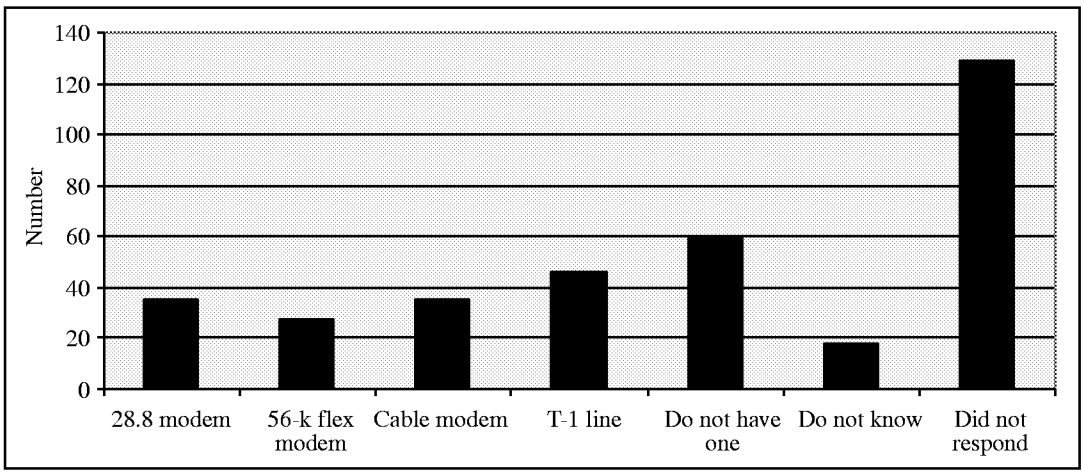

Figure 8. Type of classroom Internet connection.

and information; 191 selected **expressing ideas in writing**, and 189 selected **improving computer skills**. One hundred eighty-seven selected **learning to work independently**, 180 checked both **mastering skills** and the **remediation of skills**, 168 marked the objective **learning to work collaboratively**, 136 checked **analyzing information**, 121 of the respondents marked the objective **communicating electronically**, and 114 marked the objective **presenting information to an audience**. Seventy-one respondents did not answer the question.

Educators' Professional Use of Computers

The respondents were asked to identify the ways in which they used computers for lesson preparation or other professional activities and to indicate the frequency of each use. They were to mark all uses that applied.

To Record or Calculate Student Grades. Thirty-one percent of the persons responding (n = 285) indicated that they did not use the computer for recording or calculating student grades, 17 percent used the computer for

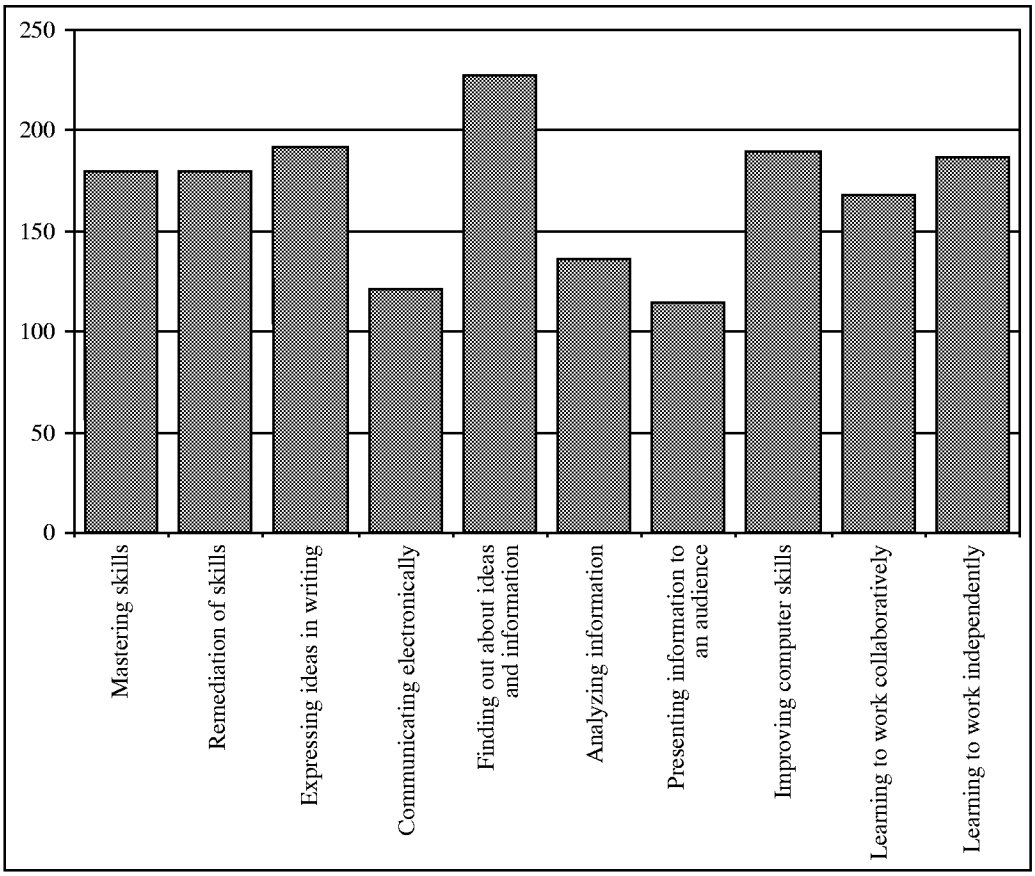

Figure 9. Objectives for student computer use.

recording or calculating student grades occasionally, 25 percent used the computer for this purpose weekly, and 27 percent used the computer for recording/calculating grades more often than weekly. Sixty-six respondents did not answer this question.

To Make Handouts for Students. Thirty-one percent of the respondents (n = 285) reported that they did not use the computer to produce handouts for students, while 17 percent did so occasionally. Twenty-five percent used the computer weekly, and 27 percent used the computer more often than that to make handouts for students. Sixty-six respondents did not answer the question.

To Correspond With Parents. Of those surveyed (n = 287), 22 percent did not use the computer to correspond with parents, while 42 percent used the computer for this purpose occasionally. Twenty-three percent reported that they used the computer for corresponding with parents weekly, and 12 percent reported that they used the computer for this purpose more often than weekly. Sixty-four respondents did not answer the question.

To Write Lesson Plans or Related Notes. Nineteen percent of the respondents (n = 285) indicated that they did not use the computer to write lesson plans or related notes, while 31 percent did so occasionally. Twenty-seven percent used the computer for writing lesson plans and related notes weekly, and 22 percent used the computer for this purpose more often than weekly. Sixty-six respondents did not answer this question.

To Get Information or Pictures From Internet for Lesson Use. Zero use of the computer to get information or pictures from the Internet for use in lessons was reported by 13 percent of the respondents (n = 286). Forty-five percent reported occasional use of the

computer to get information and pictures from the Internet for lessons, while 21 percent used the computer for this purpose weekly, and 21 percent more frequently than that. Sixty-five respondents did not answer the question.

To Use Camcorders, Digital Cameras, or Scanners for Class Preparation. Forty-seven percent of respondents (n = 286) reported that they did not use camcorders, digital cameras, or scanners to prepare for their classes. Forty-one percent used camcorders, digital cameras, or scanners for class preparation occasionally; 8 percent used them weekly; and 3 percent used the items more frequently than weekly. Sixty-five respondents did not answer the question.

To Exchange Computer Files With Other Teachers. Fifty-two percent of respondents (n = 285) reported zero use of computers to exchange computer files with other teachers, and 38 percent did so occasionally. Four percent used computers to exchange files with other teachers weekly, and 6 percent used computers for this purpose more frequently than weekly. Sixty-six respondents did not answer this question.

To Post Information on the World Wide Web. Seventy percent of respondents (n = 286) indicated that they did not use the computer to post student work, suggestions for resources, or ideas and opinions on the World Wide Web. Twenty-one percent used the computer for posting this kind of information occasionally, 6 percent reported weekly use for this purpose, and 3 percent reported use more than weekly. Sixty-five respondents did not answer this question.

Interpreting the Findings

Having presented the survey findings in the previous section, the next step is interpreting them in terms of assessing the quality of the NASA CONNECT distance learning program. Excluding the survey demographics, interpretations of the findings are presented for each of the nine survey topics.

Topic 1. Instructional Technology and Teaching

Survey respondents indicated that instructional technology enables teachers to be more creative, to teach more effectively, to accommodate different learning styles, and to increase student motivation. However, the results also indicate that survey respondents do not view instructional technology as a panacea, something that is effective with all types of students. These results are interpreted to mean that survey respondents believe in the power of instructional technology in the classroom for purposes of enhancing and enriching the learning process and experience.

Topic 2. Instructional Programming and Technology in the Classroom

Survey respondents reported that access to programming that incorporates instructional technology is increasing and that the quality of such (existing) programs is average or slightly above average. They also indicated that administrators (i.e., principals) support and encourage teachers to use instructional programs. On the downside, they indicated the following concerns regarding the use of instructional technology programs in the classroom: (1) inability of teachers to "break" the programs into teachable units, (2) the inability of teachers to fit the programs into a given class period's time frame, and (3) the lack of adequate training regarding the effective use of instructional technology programs in the classroom.

NASA CONNECT programs are 30 minutes long, making them very easy to fit into a given class period's time frame. On the other hand, it would appear prudent for program developers to ensure that (1) NASA CONNECT topics are specific; (2) that each program is developmentally (i.e., age and grade) appropriate; and (3) that pertinent information such as the instructional objectives and national standards are specific, direct, and otherwise clearly stated in the lesson guide. What is less clear is "what is appropriate and adequate

training" in the use of NASA CONNECT. While access to instructional technology can limit classroom use of NASA CONNECT, the lack of technology training and access to technical support and assistance would also mitigate its use by classroom teachers.

Topic 3. Overall NASA CONNECT Program Assessment

The overall assessment of the NASA CONNECT program is very positive. Survey respondents report that NASA CONNECT is aligned with the national mathematics and science standards. Furthermore, it appears that the following series objectives are being met. That is, (1) science is presented as a process requiring creativity, critical thinking, and problem-solving skills; (2) program content enhances the teaching of mathematics and science; (3) programs demonstrate the application of mathematics and science on the job; and (4) programs illustrate careers requiring mathematics and science. Ease of integrating NASA CONNECT into the existing curriculum was rated lowest. Consequently, programs in the 1999–2000 NASA CONNECT program will be redesigned to make the integration of NASA CONNECT into the curriculum simpler, easier, and more effective. The success of this redesign will be examined in the 1999–2000 Evaluation Booklet.

Topic 4. Program Use

NASA CONNECT is designed to enhance and enrich classroom instruction in grades 5–8. The largest percentage of the respondents use NASA CONNECT to reinforce curriculum topics, objectives, or skills previously addressed in the classroom. The next highest percent reported using the programs as special interest topics, and slightly fewer used the programs to introduce curriculum topics, objectives, or skills. The highest percentage of those surveyed indicated that they had viewed the programs on videotape. A small number viewed the programs both live and on tape, and a very small percentage viewed only the live programs. As NASA CONNECT evolves as an instructional program, it will be important to not only increase awareness and access to NASA CONNECT, but also to diversify transmission to include video streaming over the Internet.

Designed for students in grades 5–8, the largest percentage of students viewing the programs were fifth and sixth graders. A slightly smaller number of students in the fourth, seventh, and eighth grades watched the programs. A small percentage of third, ninth, tenth, eleventh, and twelfth graders were reported to have viewed the programs in the series. These data correlate well with the audience NASA CONNECT is designed to attract: teachers and students in grades 5–8. That the series is being used in small percentages by other grade levels not specifically targeted may indicate that it has educational applications beyond its intended purpose. Overall, it appears that NASA CONNECT is being used for its intended purpose by its intended audience.

Topic 5. Lesson Guides

Approximately two-thirds of survey respondents reported that they used the program lesson guides. They reported that the guides (1) are valuable instructional aids and (2) that the information (in the guides) is presented clearly. On the down side, they reported that the (1) format of the guides is not easily readable and (2) that the directions and instructions accompanying the guides are not easily understood. We interpret the data to indicate that the lesson guides may not be "user friendly." Consequently, the lesson guides for the 1999–2000 NASA CONNECT series will be redesigned to make them shorter, clearer, and more easily used. The 1999–2000 evaluation will help determine the effectiveness of the new design.

Topic 6. Classroom Activities

Approximately two-thirds of the respondents reported that they used the programs' classroom activities and experiments. They also reported that the activities and experiments complement

the programs in the NASA CONNECT series. On the down side, survey respondents appear to have some misgivings about the developmental appropriateness of the activities/experiments. Therefore, the classroom activities/experiments included in the 1999–2000 NASA CONNECT series will be examined in terms of their developmental appropriateness.

Topic 7. Web-Based Activity

About two-thirds of the respondents reported that neither they nor their students used the programs' web-based activities. While they reported that more web-based activities should be available on the NASA CONNECT web site, they also reported that web-based activities did not substantially enhance the teaching of mathematics and science or raise student awareness of careers requiring mathematics and science. Perhaps more disconcerting is that survey respondents questioned the developmental appropriateness of the web-based activities and reported that the web-based activities were not easily integrating into the curriculum.

Lack of use, concerns about the ease of integration into the curriculum, and the developmental appropriateness of the web-based activities seem to indicate that the NASA CONNECT web-based component is not reaching its potential. Reasons are subject to speculation and may be varied and multiple. However, access to technology (i.e., computers and the Internet) do not appear to be high on the list of possible reasons. Possibilities include (1) the web-based activities have not been highlighted or, as noted previously, (2) the pages may take too long to download. Given that educators want more web-based activities, perhaps the current activities need more in-depth development in terms of quantity and/or quality. Whatever the reasons, use of the web-based activities needs to be explored further.

Topic 8. NASA CONNECT Web Site

Respondents' use of the NASA CONNECT web site is mixed. About half the respondents reported that they used the NASA CONNECT web site and a similar number reported that they did not. However, high ratings were given by those surveyed to all statements about the web site except for the speed of downloading information from the site. The respondents gave the highest ratings to the legibility of the web site on their monitors and the visual appeal of the site. They ranked the design of the site, the balance between the text and the graphics, and the ease of navigating the site slightly lower. Because the NASA CONNECT web site is continually evolving, these data and the need for improvement of download time need to be included in any considerations to redesign the web site.

Topic 9. Classroom Environment

Approximately two-thirds of the respondents have computers and televisions in their classrooms. A slightly lower number had VCRs in the classrooms. Fewer reported video cameras, laser disc players, and video editing equipment available in the classrooms. Over half the respondents stated that their schools had computers, televisions, VCRs, and video cameras. A smaller number reported that their schools had laser disc players and video editing equipment. These numbers were slightly lower than the national averages, as reported in a 1998 Educational Testing Service (ETS) report. According to the report, on average, 98 percent of the nation's public schools have computers, 97 percent have VCRs, 85 percent have multimedia computers, and 76 percent have cable television (Coley, Cradler, and Engel, 1998, p. 10). The number of schools with laser disc players was higher than the reported national average, which was 35 percent. By comparison, about two-thirds of the respondents have computers, televisions, and VCRs in their homes, while a much smaller number had video cameras, laser disc players, and video editing equipment in their homes.

According to the respondents, over half the classrooms and schools have CD ROMs and Internet connections, while a smaller number had LANs and district-wide networks. While

these data are very consistent with the ETS national findings, which reported that 64 percent of U.S. public schools have Internet access and 54 percent have CD-ROMs, their data were not "cut" by school location (i.e., rural, suburban, and urban). At least half the respondents said they had CD-ROMs and Internet connections in their homes, but only a small number had LANs and district-wide networks.

About two-thirds of the respondents indicated that their schools had a PC computer system, and about a third used a Macintosh system. These data are very consistent with hardware purchase projections for the 1998–1999 academic year. According to Quality Education Data (QED), Macintosh was forecasted as having 40 percent of the market, whereas DOS/Windows-based hardware was forecasted as having 60 percent of the market share (QED, 1998). The highest percentage of respondents reported that the students in their classrooms/schools used computers from 6 to 10 times monthly. The next highest percentages showed a use of 1 to 5 times and 11 to 20 times monthly. A small percentage reported a use of more than 20 times within a given month.

The largest percentage of respondents said that students used the computers on a one-student-per-computer basis, followed at a slightly lower percentage for paired use. The smallest percentage reported that students used the computers in groups. These low ratios are above average compared to what the President's Committee of Advisors on Science and Technology has deemed a "reasonable level for the effective use of computers within schools" (a ratio of 4 to 5 students per computer), according to the National Center for Education Statistics, February 1999.

A large percentage of survey participants did not respond to the question about the specific hardware used in their classrooms for Internet connections. Those who responded gave similar percentages for the use of a 28.8 modem, 56-K modem, cable modem, and T-1 line. Lack of technical knowledge may account for the lack of response.

The respondents were given a list of possible objectives for student computer use and asked to mark all that applied. The objectives were rated in the following sequence of importance: finding ideas and information, expressing ideas in writing, improving computer skills, learning to work independently, mastering skills, remediating skills, and learning to work collaboratively. They rated lowest the objectives of analyzing information, communicating electronically, and presenting information to an audience.

Participants receiving the survey were asked to indicate the ways in which they use computers professionally. They reported using computers least for posting student work, as suggestions for resources, or ideas and opinions on the Internet; for exchanging computer files with other teachers; and using camcorders, digital cameras, or scanners for class preparation. The greatest uses were reported for getting information and pictures from the Internet for use in lessons, writing lesson plans/notes, and corresponding with parents. Limited use of computers for recording and calculating student grades and for making handouts for students was reported. The most frequent time frames for using computers for professional tasks were occasionally and weekly.

Conclusions

A self-reported mail survey was sent to individuals randomly selected from the database of NASA CONNECT registrants. Survey participants were asked a series of questions designed to determine the educational efficacy of NASA CONNECT. Based on the survey results, the following facts have been established. Survey respondents believe that NASA CONNECT (1) supports the national mathematics and science standards; (2) presents science as a (collaborative) process; and (3) illustrates the application of mathematics, science, and technology on the job. NASA CONNECT programs are designed to enhance and enrich classroom instruction; therefore, it

comes as no surprise that NASA CONNECT is used most frequently to reinforce curriculum topics, objectives, or skills and mainly in the grades for which NASA CONNECT is designed (grades 5–8). The programs are used most in a taped format. The individual teacher lesson guides are considered a valuable instructional aid, and the classroom activities/experiments are used by a majority of those viewing the programs. The related web-based activities are not as widely used as are the other program components. The survey results support the continuation of NASA CONNECT. Additional effort should be spent to (1) determine why the web-based (technology) component is under used and (2) improve the appeal and user-friendliness of the teacher (lesson) guide.

Because this is the first year NASA CONNECT has been subjected to formal evaluation, the data merely provide a snapshot, and any conclusions that are reached should be considered tentative until they can be compared with data collected for the following season. As the evaluation process continues, the longitudinal data will provide program managers with a more valid and reliable evaluation of NASA CONNECT. However, the following general conclusions and recommendations for the future are noteworthy:

1. Since the school year begins to "wind down" in late April, the NASA CONNECT evaluation booklet should be sent out earlier, perhaps as early as the beginning of April. The earlier the mailing, the more likely teachers are to complete and return the survey. An earlier return of completed surveys gives the Office of Education greater flexibility in terms of compiling and documenting the results.

2. The length of the survey does not appear to limit its completion. Although the survey contained 67 questions, the majority of respondents completed the entire questionnaire.

3. Some of the instructional technology questions, such as the type of Internet connections, may have been confusing. Although the response "I do not know" was not an option in the original evaluation booklet, many respondents hand wrote this response in the evaluation booklet. This response could be an indicator of (1) a need to reframe these questions in the future and/or (2) a potential lack of specialized knowledge among survey respondents, the majority of whom are classroom teachers.

4. Titles such as distance learning coordinator, media specialist, and curriculum specialist were not included as options in the demographic questions vis-a-vis asking respondents to identify their present professional duties. However, these titles were specified by some of the respondents in the "Other" column of the evaluation booklet. This response may indicate a growing use of these job titles in the educational community, and they may need to be considered for inclusion in the subsequent surveys.

5. The respondents were not very diverse in terms of gender, ethnicity, and age. Searching educational literature may help determine whether the demographic characteristics of NASA CONNECT users mirror the demographic characteristics of educators in general.

6. Attempts to assess each NASA CONNECT program would be a useful addition to the overall series assessment that is done towards the end of the season. Assessing each program would provide the Office of Education with a microview of NASA CONNECT.

7. Advanced planning is essential for teachers. One key to making NASA CONNECT a successful program is making certain that educators receive the lesson guides in a

timely manner. Timeliness was clearly a major suggestion/complaint of NASA CONNECT users. It is really very simple: When the lesson guides are received in a timely manner, teachers can incorporate them into their lesson plans. Early distribution of teacher lesson guides should be a high priority for the 2000–2001 NASA CONNECT series.

8. The accessibility of NASA CONNECT is an issue. Some of the most frequent complaints/worries/questions received dealt with the various methods of receiving NASA CONNECT.

   - How do you set up a satellite dish to receive NASA CONNECT?
   - How do you know if your PBS station is carrying NASA CONNECT?
   - How do you get the Internet broadcast?

Because uplink problems were encountered with two (of the seven) programs, the entire issue of accessibility should be reevaluated in terms of a "zero" defects mode of operation.

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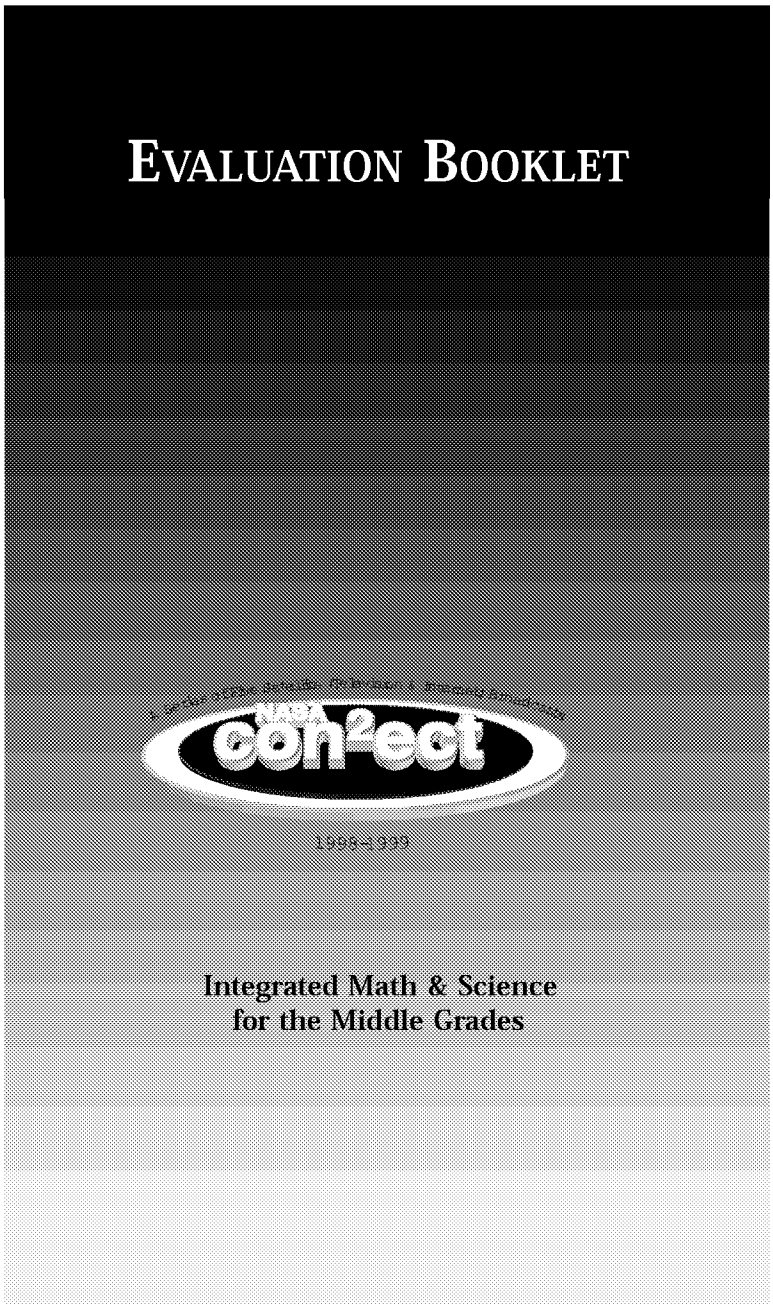
Appendix A

1998–1999 NASA CONNECT Evaluation Booklet



Evaluating the Effectiveness

of the

1998-1999 NASA CONNECT™

Program Series

Instructional Technology and Teaching

Please indicate (circle the number) the extent to which you disagree or agree with the following statements about instructional technology and classroom teaching.

Instructional technology . . .

1. enables teachers to teach more effectively

Disagree				Agree	No Opinion
1	2	3	4	5	9

2. enables teachers to accommodate different learning styles

Disagree				Agree	No Opinion
1	2	3	4	5	9

3. enables teachers to be more creative

Disagree				Agree	No Opinion
1	2	3	4	5	9

4. increases student learning and comprehension

Disagree				Agree	No Opinion
1	2	3	4	5	9

5. increases student willingness to discuss content/exchange ideas

Disagree				Agree	No Opinion
1	2	3	4	5	9

6. increases student motivation and enthusiasm for learning

Disagree				Agree	No Opinion
1	2	3	4	5	9

7. is effective with virtually all types of students

Disagree				Agree	No Opinion
1	2	3	4	5	9

Instructional Programming and Technology in the Classroom

Please indicate the extent to which you disagree or agree with the following statements about instructional programming and technology.

8. Increasingly, schools have greater access to instructional programs.

Disagree				Agree	No Opinion
1	2	3	4	5	9

9. The majority of these programs are of good quality.

Disagree				Agree	No Opinion
1	2	3	4	5	9

10. The majority of these programs are **not** appropriate (i.e., too advanced or too basic) for my students.

Disagree				Agree	No Opinion
1	2	3	4	5	9

11. The majority of these programs are **not** easily broken into "teachable" units.

Disagree				Agree	No Opinion
1	2	3	4	5	9

12. Administrators support and encourage teachers to use instructional technology in the classroom.

Disagree				Agree	No Opinion
1	2	3	4	5	9

13. Teachers receive the training and technical assistance to support classroom use of instructional technology.

Disagree				Agree	No Opinion
1	2	3	4	5	9

14. Classrooms are growing increasingly rich in instructional technology.

Disagree				Agree	No Opinion
1	2	3	4	5	9

15. Teachers are generally positive about introducing/using instructional technology in the classroom.

Disagree				Agree	No Opinion
1	2	3	4	5	9

Overall Assessment

Please indicate the extent to which you disagree or agree with the following statements concerning the five programs in the 1998-1999 NASA CONNECT™ series.

16. The programs met their stated objectives.

Disagree				Agree	No Opinion
1	2	3	4	5	9

17. The program content was developmentally appropriate for the grade level.

Disagree				Agree	No Opinion
1	2	3	4	5	9

18. The program content was aligned with the National Math and Science Standards.

Disagree				Agree	No Opinion
1	2	3	4	5	9

19. The program content was easily integrated into the curriculum.

Disagree				Agree	No Opinion
1	2	3	4	5	9

20. The program content enhanced the teaching of math and science.

Disagree				Agree	No Opinion
1	2	3	4	5	9

21. The programs raised student awareness about careers that require math and science.

Disagree				Agree	No Opinion
1	2	3	4	5	9

22. The programs presented the application of math and science on the job.

Disagree				Agree	No Opinion
1	2	3	4	5	9

23. The programs presented workplace science as a collaborative process.

Disagree				Agree	No Opinion
1	2	3	4	5	9

24. The programs presented science as a process requiring creativity, critical thinking, and problem-solving skills.

Disagree				Agree	No Opinion
1	2	3	4	5	9

Program Use

The following questions pertain to the five programs in the 1998-1999 NASA CONNECT™ series. (Please circle the appropriate response.)

25. The programs were used

a. to introduce a curriculum topic, objective, or skill.

Yes No

b. to reinforce a curriculum topic, objective, or skill.

Yes No

c. as a special interest topic.

Yes No

d. other (please specify) _____

_____

_____

_____

_____

_____

26. The programs were viewed

Live Taped Both

27. Indicate the grade level(s) that viewed the programs:

3 4 5 6 7 8 9 10 11 12

LESSON GUIDES

Please indicate the extent to which you disagree or agree with the following statements concerning the printed lesson guides used for the five programs in the 1998-1999 NASA CONNECT™ series.

28. Did you use the lesson guides?

    Yes No ⟶ **(proceed to question #32)**

29. The directions/instructions in the lesson guides were easily understood.

Disagree				Agree	No Opinion
1	2	3	4	5	9

30. The layout of the lesson guides presented the information clearly and was easy to read.

Disagree				Agree	No Opinion
1	2	3	4	5	9

31. The lesson guides were a valuable instructional aid.

Disagree				Agree	No Opinion
1	2	3	4	5	9

CLASSROOM ACTIVITY

Please indicate the extent to which you disagree or agree with the following statements concerning the five classroom activities used in the 1998-1999 NASA CONNECT™ series.

32. Did you use the classroom activities (experiments)?

    Yes No ⟶ **(proceed to question #36)**

33. The classroom activity (experiment) was easily implemented into my lesson plan.

Disagree				Agree	No Opinion
1	2	3	4	5	9

34. The classroom activity (experiment) complemented the lesson for each show.

Disagree				Agree	No Opinion
1	2	3	4	5	9

35. The classroom activity (experiment) was developmentally appropriate for the grade level.

Disagree				Agree	No Opinion
1	2	3	4	5	9

WEB-BASED ACTIVITY

Please indicate the extent to which you disagree or agree with the following statements concerning the online activities posted on the 1998-1999 NASA CONNECT™ series web site.

(i.e., Career Corner, Expert Panel, Kids Corner Aeronautics Camp, Road Rally, Secret Formula, Sound Machine)

36. Did you or your students use the web-based activities?

    Yes No ⟶ **(proceed to question #43)**

37. The programs' web-based components were developmentally appropriate for the grade level.

Disagree				Agree	No Opinion
1	2	3	4	5	9

38. The content of the online activities was easily integrated into the curriculum.

Disagree				Agree	No Opinion
1	2	3	4	5	9

39. The content of the online activities enhanced the teaching of math and science.

Disagree				Agree	No Opinion
1	2	3	4	5	9

40. The online activities raised student awareness of careers that require math and science knowledge.

Disagree				Agree	No Opinion
1	2	3	4	5	9

41. More online activities should be available on the NASA CONNECT web site.

Disagree				Agree	No Opinion
1	2	3	4	5	9

42. Did you use the NASA Home Connect program?

    Yes No

NASA CONNECT™ WEB SITE

Please indicate the extent to which you disagree or agree with the following general statements concerning the web site for the 1998-1999 NASA CONNECT™ series.

43. Did you visit the NASA CONNECT web site?

    Yes No ⟶ **(proceed to question #50)**

44. The NASA CONNECT web site is visually appealing.

Disagree				Agree	No Opinion
1	2	3	4	5	9

45. The web site is easily navigated.

Disagree				Agree	No Opinion
1	2	3	4	5	9

46. When viewed on my monitor, the web site is clearly legible.

Disagree				Agree	No Opinion
1	2	3	4	5	9

47. The web site is designed so that my printouts of individual pages are legible.

Disagree				Agree	No Opinion
1	2	3	4	5	9

48. There is a good balance between text and graphics on the web site.

Disagree				Agree	No Opinion
1	2	3	4	5	9

49. The NASA CONNECT web site downloads quickly.

Disagree				Agree	No Opinion
1	2	3	4	5	9

Classroom Environment

The following questions pertain to the classroom environment in which you teach.

50. Do you have the following equipment in your _____ ? (Please check all that apply.)

	classroom	school	home
Television	___	___	___
VCR	___	___	___
Video camera	___	___	___
Laserdisc player	___	___	___
Video editing equipment	___	___	___
Computer	___	___	___

51. Does your computer have the following in your _____? (Please check all that apply.)

	classroom	school	home
CD-ROM	___	___	___
Local area network	___	___	___
District-wide network	___	___	___
Internet connection	___	___	___

52. How many computers are in your classroom? (Please enter a number below.)

_____ (if "0", proceed to question #57)

53. The operating system used on your school computers is _____. (Please circle.)

Macintosh Windows

54. In a given month, about how many times does a typical student in your class use a computer in school? (Please check.)

— 1-5 times — 6-10 times — 11-20 times
— 21-40 times — 41+ times

55. Generally speaking, how do the students operate the computers in your classroom? (Please check.)

___ one student per computer
___ in pairs (2)
___ in groups of 3 - 5
___ other (please specify)

Classroom Environment

56. My classroom connection to the Internet uses a _____ . (Please check.)

___ 28.8 modem
___ 56-k flex modem
___ cable mode
___ T-1 line
___ do not have one

57. Which of the following are among the objectives you have for student computer use? (Please check all that apply.)

___ Mastering skills just taught
___ Remediation of skills not learned well
___ Expressing ideas in writing
___ Communicating electronically with others
___ Finding out about ideas and information
___ Analyzing information
___ Presenting information to an audience
___ Improving computer skills
___ Learning to work collaboratively
___ Learning to work independently
___ Other (describe) _____
_____
_____

58. In which of these ways do you use computers to prepare lessons or in other professional activities? (Please check.)

a. to record or calculate student grades

___ Do not use
___ Occasionally
___ Weekly
___ More often

b. to make handouts for students

___ Do not use
___ Occasionally
___ Weekly
___ More often

c. to correspond with parents

___ Do not use
___ Occasionally
___ Weekly
___ More often

d. to write lesson plans or related notes

___ Do not use
___ Occasionally
___ Weekly
___ More often

e. to get information or pictures from the Internet for use in lessons

___ Do not use
___ Occasionally
___ Weekly
___ More often

f. to use camcorders, digital cameras, or scanners to prepare for class

___ Do not use
___ Occasionally
___ Weekly
___ More often

g. to exchange computer files with other teachers

___ Do not use
___ Occasionally
___ Weekly
___ More often

h. to post student work, suggestions for resources, or ideas and opinions on the World Wide Web

___ Do not use
___ Occasionally
___ Weekly
___ More often

DEMOGRAPHICS

These questions will be used to determine whether survey respondents with different backgrounds and characteristics have different opinions regarding instructional technology and NASA CONNECT™. (Please check the appropriate response.)

59. Gender

___ Male ___ Female

60. Present professional duties (please check all that apply)

___ Teacher
___ Home Schooler
___ Technology Coordinator
___ Principal
___ Math Coordinator
___ Science Coordinator
___ Librarian/Media Specialist
___ Community College Instructor
___ College/University Instructor
___ Other (please specify) _____
_____

61. School type (please check only one)

___ Public
___ Private/Parochial
___ Home School
___ Native American School
___ Community College
___ College/University

62. School location (please check only one)

___ Urban
___ Suburban
___ Rural

63. Highest degree

___ High School Diploma/Equivalency
___ Associates (2-year)
___ Baccalaureate (BA/BS)
___ Masters/Masters Equivalency
___ Doctorate

64. Ethnicity (please check only one)

___ African American
___ Hispanic
___ Asian
___ Native American
___ Pacific Islander
___ Caucasian
___ Other (please specify)

65 How many years have you been a professional educator? (Please enter a number below.)

_____

66. Your age (Please enter a number below.)

_____

67. Do you own a personal computer?

___ Yes ___ No

67. Are you a member of a professional (national) mathematics or science educational organization (e.g., NCTM, NSTA)?

___ Yes ___ No

Thank you for your assistance.

In appreciation for having assisted us, we are pleased to offer you a copy of the NASA CONNECT™ assessment report. To receive your free copy of the assessment report, please check the box to the right. ☐

With your assistance the NASA Langley Research Center is providing the educational community with quality math and science instructional programming.

Please return to:
NASA CONNECT
Mail Stop 400
NASA Langley Research Center
Hampton, VA 23681-0001

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Appendix B

Table B1. Comments Returned With Blank Evaluation Booklets

ID number	Comment
99-0219	We did not end up using NASA CONNECT as I felt the topics were too difficult for 4th grade. I had hoped I could work parts into my curriculum but was unable to.
99-0548	Our PBS station (UNC-TV) did not carry your program, so while we signed on, ready to go, we were unable to participate. Thanks for the written materials.
99-2221	Materials were too difficult for my average third-graders.
99-1823	My apology to you and your dedicated staff. Due to SOL practice, there was no time to get involved in your activities.
99-2753	This program is great, but far too advanced for our 4th grade.
99-1415	We were unable to use the NASA CONNECT program this year due to our science teacher's extended leave. We hope to try again next year.
99-3686	I have not used this program. I will use it during 1999–2000.
99-3695	Has yet to be implemented. Joined late.
99-3519	I ordered the program for next year's curriculum so I have not used it yet. Am looking forward to participating next year. Thank you.
99-3658	Will begin 1999–2000 school year. Thank you!
99-1129	We are not yet hooked up to the Internet.
99-1187	My teachers did not use materials…no time.
99-3402	Received information at end of year so didn't get to use it. However, we hope we're registered for next year.
99-1255	Unable to use due to technical difficulties with televisions in the classrooms.
99-2815	We were only able to register for the final program. In taping the program for later use, VCR malfunctioned! We would like to be involved next year if program is available.
99-1069	Our cable provider did not fully wire our building and access was not available.
99-3208	Haven't used this yet.
99-3075	We were not able to receive a transmission of the broadcasts. Thank you for the materials you sent earlier. We would like to participate next year if we can get the broadcasts.
99-1803	Time did not allow me to use as I wished so I don't feel I should answer this.
99-2845	Does not apply to me - I am a Second Grade teacher.
99-3427	Thank you for the Connect materials. Since our science class had been planned for the year, I was not able to implement the program. I will send the evaluation once I have implemented the program.
99-1028	Due to technical difficulties with VCR, we were unable to participate.
99-2921	To be used in 1999–2000 school year.
99-2757	We'll start next year.
99-2083	We were not able to get the video tapes. Will this be repeated next year?
99-0401	I am not able to complete this survey. I received the materials at Central Office and sent them out to our middle and intermediate school science teachers. I do not know which teachers may have used the materials in their classrooms on a regular basis.
99-0461	Taped programs are very fuzzy/poor quality. Would like a schedule of dates and times for programs and REPEAT programs.
99-0040	Too advanced for 3rd Grade.
99-0735	We didn't receive all of the television program.
99-2416	Plan to do activities next year if they do not involve too many people.
99-3794	Could not get through on our computers from school.

Table B1. Concluded

ID number	Comment
99-1571	Please note - we did not receive tech from you. We did receive wonderful information and lesson plans. I am answering about what you sent.
99-1442	Sometimes, I didn't receive the information until after the program had aired.
99-1463	The program did not fit my curriculum.

Appendix C

Table C1. Positive Comments

ID number	Comment
99-3210	Packets received look great. The teachers are excited.
99-0164	My students have enjoyed all programming so far. Especially liked activities related to flight. I have incorporated any related experiments into my other science/technology instruction. Other teachers have watched programming with students but have not used as many of the related activities. I expect this will improve next school year as they have seen how this year's activities can be used and that all activities do not have to be tried.
99-0038	Participation for our classes is a great tool in our aerospace magnet program. Thank you for the opportunity.
99-0020	Thanks for this program. It was great to have your program when we incorporated live coverage of John Glenn's return to space!
99-0108	None at this time other than I hope that funding remains available for education of NASA's mission and materials for educators.
99-0592	I tape the programs and then make them available to the other teachers. Some of the programs have been well received. Thanks.
99-0016	Thanks very much for the information. I would be interested in anything else you do.
99-0023	We really enjoy this program. Thanks!
99-0072	We are enjoying using these materials.
99-0111	Excellent program and materials!!!
99-0011	Excellent information and materials. Thanks!
99-0037	Thank you - A great program.
99-0039	Would like to continue program next year.
99-0253	I appreciate the high quality material.
99-3821	I'm looking forward to the materials. The class I attended at the SECO conference was very helpful - many great ideas.
99-3554	Thanks! Looking forward to a great experience!
99-0360	My students and I have enjoyed and been enriched with the viewing of the taped programs. The materials are difficult for some of the classes and at this writing, I am the only teacher consistently using them. Please continue to send any materials for instructional purposes. I will continue using them. Thank you.
99-2399	Saw 2-11-99 program - Excellent!
99-0555	I am grateful a government agency is helping to educate students in an area that most teachers need help.
99-1295	Excellent program.
99-1572	Excellent program - great activities.
99-3209	Thanks for the great materials!
99-3100	Thanks!
99-2883	Excellent Program! Thank you!

Table C1. Continued

ID number	Comment
99-3213	Thank you for the material. We look forward to using it.
99-1185	Programs have been very helpful.
99-3525	I thank you for the information and will be implementing it shortly. The material will be very informative and educational for our students. Thanks.
99-3408	Great materials. Can't wait for more.
99-0588	Thank you for the material. I have used it in teaching some basic scientific and mathematical facts.
99-3805	How will you inform one of the dates and times of video? The lessons look great.
99-0715	It's wonderful!
99-1436	Do you have video tapes available for use (rental/purchase?) My school does not have a satellite receiving dish, so we haven't been able to take advantage of any of the programs. We have used the materials however, which have been GREAT!
99-1114	Thank you for your continued interest and support for education and students.
99-2645	Thank you for the wonderful resources. I used these in the past when I taught 6th grade science at a middle school. Therefore, I was very excited to be able to provide these materials to our 4th and 6th grade teachers.
99-2905	Thank you for your commitment to the education of our youth.
99-0582	I attended an excellent presentation at AATA and was eager to participate. Unfortunately, due to cable problems, curriculum, and scheduling, I never used the programs this year. I intend to teach flight next year so I will look forward to participating. I applaud your development of a very worthwhile aid to teachers.
99-0262	I very much appreciate the use of these materials, and I wish to continue to receive them!
99-3287	Mr. Esidro, I want to thank you for all of your help. I had trouble downloading, so I was thankful that you mailed me the material. I think I would prefer to keep getting items through the U.S. Mail if possible. Also, we added another 4th grade class this year due to an increase in our enrollment.
99-3416	I wish I had known about these programs. My science teachers could have been using the programs all year. Can we get tapes of the missed programs? Do we need to register for next year?
99-0970	I would like to continue receiving this information.
99-1945	Excellent resource. I teach 4-5 grade gifted students who often have advanced knowledge and intense interest. This resource is used for independent studies.
99-2843	We are excited about the opportunity to be exposed to the most current information available. Hands-on inquiry-based model works well to motivate my students.
99-3099	Thank you for the exciting lessons!
99-1296	I have enjoyed using your program!
99-1167	My classroom teachers think these materials are wonderful!
99-2744	We appreciate your support of education and look forward to as many materials as we can get. Teachers today face smaller budgets with rising costs per item. Out of pocket expenses are skyrocketing to a professional already underpaid. We need our partners in education to help save our system and continue to provide outstanding education to our future leaders.
99-1571	I love the material that you send. I share it with the other teachers at my level. Thanks so much.
99-1413	The materials that we have received have been of high quality and very useful.
99-0406	We have loved NASA programming.

Table C1. Continued

ID number	Comment
99-0728	Materials are organized very well!
99-1365	Programs are used in our ROTC and Gifted and Talented classes. They are also used in ALL of our science classes.
99-1268	Excellent! Students loved it!
99-1471	Your programming is excellent. Is it possible to get lessons geared more towards high school? Please continue what you are doing because this is great stuff. Students really respond. I am trying to get more teachers watching.
99-1382	Thanks for making this program available! It makes so much of what we study in class relevant to the real world.
99-1867	I am president of the Wyoming Council of Teachers of Mathematics. I have been able to distribute my lesson packets to colleagues in my school district. I have also notified colleagues throughout the state and often across the country of the CONNECT program. Please allow me to continue to keep people informed and involved. I have not been able to videotape. How may I get copies of the programs?
99-1663	Thank you for all the literature you've sent. It has been very helpful and I look forward to each packet. Thank you again.
NA-0050	Many thanks to NASA Langley Research Center's Office of Education's support to the world of education. You are assured that your materials will benefit many of our Native American students. Thanks.
NA-0036	Scarcity of teaching tools is very common out here on the Navajo Reservation. The materials you have offered are most useful for our school.
99-2084	I appreciate the materials you have sent me. We are a very small school and any science materials greatly benefit our program. Thank you! It is a change not to have to buy or beg for materials to use in the classroom.
99-1940	This is a terrific series of programs that my students really get into!
99-2912	Science teacher at middle school seems really interested in using this material, it fits in with her lesson plans and the things she teaches. She thinks the children will be really interested.
99-0202	Super videos and supplemental worksheets. The toothpaste unit most recently was unusable in a crowded curriculum.
99-2701	Please continue to send the info. I will try to keep the kids involved. Thanks.
99-0437	Thank you.
99-2924	Thanks.
99-2763	My grade level teachers in the fourth grade are excited about using these materials in their science curriculum! Please keep us informed about any future or additional programs and materials. Thanks!!
99-0821	The items that have been sent so far have been great!
99-0455	This is a very good program for students!
99-3425	Could we please have copies of the video presentation as we received this too late to tape them all and we would love to have the videos. I will pay for tapes and shipping if necessary. Help! Thanks!
99-3211	Thank you!
99-0070	We have not been able to use all of the tapes but the print info. has been useful.
99-2644	Excellent Resources! Please Continue!!

Table C1. Continued

ID number	Comment
99-0627	The school packets I received were given to the 4th and 5th grade teachers. They were excited to receive such great material. These have been great resources for our teachers. Please send them to us another year. We sincerely appreciate such quality. The handouts assist our teachers in preparing their lessons!
99-1270	It was great!
99-1116	The teachers have enjoyed receiving their NASA CONNECT packets and putting them to good use in their classrooms. Thank you very much!
99-1359	Very helpful program.
99-0725	Thank you.
99-1046	So far so good!
99-0861	Everything we've used is great. Time zone differences make live participation impossible. How about a delayed time? 12:00 for you would be 9:00 for us - Perfect!
99-1427	We've enjoyed our materials. Our teachers are just getting started using them, so I can't share comments yet. But I've gotten wonderful (and fast) service from Kevin via Internet.
99-1503	I have incorporated into the science curriculum (to expand on concepts being taught in the classroom) the information derived from the CONNECT program.
99-1633	Thank you for your support for teachers!
99-1513	Please keep information coming.
99-1245	It's been a great service.
99-1276	Thank you.
99-1079	Great materials. Keep up the good work.
99-1607	Excellent programs. Thank you.
99-1504	We're enjoying the programs - Thanks!
99-1289	Thank you!
99-0368	Students and teachers enjoy the program.
99-3638	Working for an electrical engineer for 5 years and associating with 2 dozen engineers at the Johnson Space Center, Houston, TX, I appreciate the information involving NASA and its research. Please, Keep me informed.
99-3541	My school is currently being wired for classroom internet service so I may change the way I receive my information. Thank you for sending the excellent materials. My students will love this!
99-3552	Thank you for the materials.
99-3502	I am very excited about this program and am looking forward to using it in the classroom.
99-2740	I am excited about using this information in my classroom!
99-1661	These packets really enhanced my math and science program.
99-0734	Continue to send informative activities.
99-2094	I missed taping the first programs in the series - Plane Weather. Will it be repeated? Great programs - thanks for making them available to us.
99-1644	Please note: I have recently changed roles in education. I am currently the LaSIP Math and Science Coordinator at Northwestern State University. My job will be to train teachers. Any information you can continue to share would be appreciated.
99-1597	Very good program. Provides materials and information useful to my class.
99-1111	Great, Thanks.

Table C1. Continued

ID number	Comment
99-0964	My computers are down more often than they are up and our e-mail has yet to work. I greatly appreciate things sent in the mail.
99-0983	Thank you! Your programs are always welcome!
99-2062	Loved what we have completed so far. Our curriculum is changing and I will work this summer to incorporate these materials into the science-math program for 1999–2000. I don't know if you need this or not: Total students (529), Male (290), Female (239), White (38%), Black (60%), Other (2%), Title I school.
99-0624	My students have enjoyed this educational experience. We have learned and studied and done research and tried different activities. This has been a positive experience.
99-2909	Thanks for all your help.
99-2855	I am pleased to find out about NASA CONNECT. Thank you for all the materials.
99-2574	I believe this program can really help to tie in technology along with Math and Science. I trust the teachers are really using it in the classroom. If I survey and find out they are not - it will become part of the Library Program next year. We received our materials late so we are getting them out now.
99-2863	We would like to receive our information by mail because we have had technical difficulties with our e-mail this year. Thanks for your prompt response.
99-2338	Thanks for your services.
99-2934	I am very excited about this wonderful opportunity.
99-1446	Since we have limited availability to view the programs due to scheduling in the media center (we don't have access in our classrooms) we wondered if VCR tapes are available that we could use. We've integrated the packet information into a space unit we're doing with our 78 students. Because of my participation in NASA's Spaceday and the website I developed, Baldwin has been selected as a NASA Signature School? I've registered our team for the next live NASA Cybercast. All Free Materials are greatly appreciated. We love what we have received so far. Thanks!
99-2705	The activities are going to be a great learning experience for my students! Thank you!
99-0712	Our 4th grade teacher loves NASA CONNECT! Thank you!
99-0359	The quality of the materials presented is excellent. The integration of math, science, and technology is extremely well done.
99-0850	NASA program has become an interesting program for my students. They really enjoy the classes I prepare for them.
99-1341	Great Resources! Both the print and Internet sites are terrific.
99-1106	We used the glide ratio lesson and the kids really liked it - the materials are very clear and helpful. Thanks!
99-0629	Students enjoy activities.
99-1274	You provide an excellent source of information to our students.
99-1291	Thanks for this – we've benefited greatly.
99-1065	Nice clear plans - age appropriate for middle school students.
99-1303	Great program offerings.
99-0867	Teaching science is much more fun and educational using hands-on materials and viewing materials (videos, posters, etc.) Thank you for helping us make teaching more exciting!
99-0195	Thank you for providing this information for our schools.
99-1066	Very informative and useful material.

Table C1. Continued

ID number	Comment
99-1443	Materials are very helpful. Thanks!
99-1259	I am not sure how the teachers are implementing your information, but the teachers seem thrilled with each new release! *(this comment is from a librarian).*
99-0760	Great Activities!
99-1166	We appreciate your helpful material.
99-0859	A very worthwhile and informative program. Thanks.
99-1157	Thank you!
99-0122	I appreciate the help that Kevin has given me with the taped copy!! Thanks!
99-1075	Good programs with great information - just need more time in each schoolday and in each schoolyear.
99-1097	Thank you for offering the materials free of charge. My students are particularly interested in the MARS project. I would appreciate any additional information on the latest return trip to Mars that launched early in January 1999.
99-1362	Since receiving the materials from CONNECT, my science instruction and my students interest in the area of science have soared! Thank you for such a wonderful opportunity to be a part of this program.
99-0194	Your programs are very good. Our district has a cable channel on our local cable network. We play these programs back over our cable channel. Our cable company has 36,168 subscribers. All of these can view your program from our channel.
99-0143	Thank you.
99-1104	It is very helpful to have up-to-date science information.
99-1125	It greatly enhances my space studies for my students.
99-0124	Thank you so much for this program! It's GREAT!
99-1025	This information should help keep our staff current, and in a better position to take advantage of other opportunities offered by NASA.
99-1191	The teachers and students enjoy CONNECT. Much of the information is fascinating.
99-0386	Thank you - the materials are great.
99-0985	Thank you!
99-1181	I like CONNECT very much. I use the materials at different grade levels because of the curriculum.
99-0541	I am looking forward to using these materials as part of my curriculum.
99-1037	Good Program!
99-0218	My students have enjoyed the lessons taught from NASA. Thanks.
99-1350	Thanks for including me in this program.
99-0334	I feel that this is a great program. Keep them coming!
99-1175	Do you have a list of the programs that will be going on this spring? I really like this connection!
99-1323	Being able to tape the show has proven beneficial to fitting the program into the children's schedule. The programs have been very good and the children enjoy viewing as well as doing the work that goes along.
99-1392	We have used the last couple of units and found them to be aligned very well with our curriculum. Teachers have come to me saying how much they like the program. The children also enjoy them. Your program has been highlighted in our school news with great...
99-0184	Thanks so much! Great program.

Table C1. Continued

ID number	Comment
99-0229	I have been able to coordinate many lessons with our curriculum. The information is current and easy to use. Thank you.
99-1408	NASA CONNECT has been a wonderful and positive program used in my science classroom. Thanks!
99-0388	Great responses from our teachers using your materials.
99-0694	Love all of the hands on materials and ideas.
99-0612	Our 6th grade teachers have incorporated this program into their space unit with great success!
99-1165	Awesome! Keep them coming! Easy to use! Thank you!
99-1240	Excellent program!
99-0235	These look like very good programs. It is good to see science programs for younger grade levels.
99-0425	The information and packets are an excellent teaching unit. They provide everything needed and save the teacher an extreme amount of work.
99-0340	I have not used all of the projects with my students; however, they enjoyed the ones we did. Thank you!!
99-0134	How very lucky to have such an organization as yours do such a program - we love it!
99-0158	Great programming - need incentives to motivate teachers to use.
99-0309	Great program! Thanks.
99-0044	RuralNet has provided me tapes and info about CONNECT. They provide me with hyperlinks that I file for use in the classroom. I think this program resource is very important for current educational resources for student learning.
99-0550	I like the lessons - I share with others at the school.
99-0352	Thank you for providing this program.
99-0181	This is my first year using the program and I have enjoyed it. Very informative. I have not been online though.
99-0157	Good materials. Thanks.
99-0162	Great information.
99-0252	Very good program.
99-0344	It is a wonderful supplement to our current curriculum. Thank you.
99-0636	We are eagerly anticipating our participation!
99-1131	Thanks! Very valuable.
99-0250	This is a great program.
99-0303	The students enjoy the NASA CONNECT series. Thanks.
99-0254	This is a wonderful program with many possible extensions and enrichments. Please continue to send us materials. Also, if you are in need of lesson ideas, we would be glad to share.
99-0377	Really an excellent resource.
99-1115	Some of our classes have enjoyed watching programs which supported their curriculum. Thank you for making these programs available to us.
99-0376	The CONNECT programs will fit in well with the Challenger Center activities we will be participating in.
99-0135	Teachers have really enjoyed the material. Thanks!

Table C1. Continued

ID number	Comment
99-0716	Thank you very much for the numerous packets of info received this year. If I don't use some of the materials, I pass it along to other schools in our county! This may sound trivial, but I appreciate the hole-punched materials for my notebook and the different areas of content covered. Thank you!
99-0512	I found it useful and an innovative means of teaching pertinent subject matter.
99-0308	We have enjoyed the programs this year so far. I do a huge aviation unit every year with the kids. This has been a welcome addition to the curriculum.
99-0136	Excellent - we love viewing the materials.
99-0209	Thanks for everything. This is a great program.
99-1584	We are tuned in everytime you broadcast.
99-0578	The material I have used this year is excellent. The material is very compatible and exciting to weave into the ongoing curriculum.
99-1635	Keep up the good work!
99-0010	We are a public TV station - WCMU - that broadcasts NASA CONNECT. I appreciate being able to access your web site, etc. to get info for our viewers and the station!
99-1041	I am excited about the opportunity afforded to my students.
99-2797	I am really looking forward to using this series.
99-2694	Wow! Thank you for the materials. I am so pleased to get them and share them. Could you please include in the future more packets? Thanks!
99-2816	I am looking forward to using this series with the students in the Gifted Program at our school. I am always looking for ways to make the learning of math and science concepts/facts meaningful and interesting for the students.
99-0845	I certainly wish I had more time to use these great materials.
99-1646	I'm very glad to get these materials and use them in a variety of curriculum areas.
99-2671	We are very interested in the CONNECT program. Thank you for the information and plans. We cannot wait to implement the program. Thanks.
99-1570	The materials and activities are "user friendly" and keep the students focused and excited.
99-2747	Should be able to use this material mostly in 6th grade physics. I plan on videotaping the shows to use off-the-shelf working material into existing plans. Looks very good. Thanks very much.
99-2007	Lesson Plans are well written! Lots of relative information included. Thank you!
99-1449	The NASA CONNECT programs provide a rich learning experience for our 4th and 5th grade students.
99-1269	Would it be possible to receive a list of all the shows and their broadcast times? We videotape the programs and use them at a later date. I would also like to tell you how much my students have enjoyed NASA - information they received was very helpful.
99-2246	We've successfully used "Recipes for the Future," "Wherever you Go," and "Plane Weather" this past year. Unfortunately, we missed the most recent online program (Feb 12) because our schools were closed that day. Thank you for the outstanding materials and…
99-0214	Good materials and integration of Science and Mathematics.
99-1063	We got to watch the last program and even got to call in, my students loved that! Thanks! I couldn't get into the chat room though.
99-2690	Thank you for the materials. After I use them I will e-mail additional comments or concerns.
99-2739	Thank you.

Table C1. Concluded

ID number	Comment
99-2757	I am participating in the GLOBE program and I feel that NASA CONNECT will be very beneficial to me.
99-2790	I can't wait to see the tape of the program. Students are enthusiastic about this.
99-2741	Sounds like a great program! We can't wait to get started!
99-1680	We are excited about this program.
99-1941	Thank you!
99-0101	Good program. I have had difficulty viewing at assigned time. Video tape more useable.
99-1651	Good information for me and students. Also up to date materials.
99-2821	Thank you so much!
99-2734	I appreciate the materials you have sent to me. I look forward to using the activities in the future instruction related to space education.
99-1608	Thanks for providing this service.
99-1792	Thank you for your assistance. By next year we will have e-mail addresses.
99-2819	Thanks so much. We are excited about using these materials.
99-3695	Thank you for the materials received by mail. This is much appreciated and I am looking forward to implementing these fascinating lessons!
99-3770	The fourth and fifth grade teachers at Marlow Elementary School are very interested in this program. I sincerely appreciate your quick response and the help you have given me. Thanks.
99-3699	Thank you!
99-1379	Thanks very much. Do you have teacher workshops?
99-1685	Thanks! Great idea!
99-3648	Appreciate program very much.
99-3658	Thank you!
99-1345	Great program!
99-3646	Wonderful program materials - Really connects with our curriculum.
99-3450	Thank you for the materials.
99-3615	Thank you for a great program - the kids love it!
99-3621	Thank you for everything!

Appendix D

Table D1. Negative Comments

ID number	Comment
99-0084	The programs are too difficult for my 4th Graders.
99-3208	I did not receive enough "Plane Weather" packets. I was one short. The materials look great. Can't wait to begin!
99-0452	Some material and vocabulary are a little beyond the students understanding. However, I believe they have enjoyed and learned from the videos. I have used (with adjustments) the information in the teacher packets.
99-0070	We have not been able to use all of the tapes but the print info. has been useful.
99-1325	I am not participating so please remove my name. Thanks!
99-0404	This is too advanced for my students. However it looks interesting. Thanks.
99-0364	I've not been able to use the CONNECT materials. They are not as user friendly as I had hoped, and the terminology and activities are too difficult for my students.
99-1640	Is it possible that you could make the written material more age appropriate and relevant to my 5th grade students?
99-3520	I wish I had received information on this earlier in the year. We plan our year long themes and components at the end of the summer. Enjoy using your packets.
99-2737	According to the e-mail I received, we did not make the program. Why are you sending this?
99-1658	I have not received any information on when to tape my programs.
99-2077	I need info on where these tapes are shown. We missed the last round because we didn't know where to watch. Could we get copies of the shows (past) sent to us?
99-0574	Some of the materials I have received are above grade level. While very interesting to me, many of my students have become frustrated and confused.
99-1189	Unfortunately, none of our science teachers have used the materials. Thank you anyway, but in order not to waste your time and materials, you may drop us from the registration. I'm sorry.
99-1366	Concern: Curriculum Integration.
99-1020	Need more info on station, days, and times to view programs.
99-0647	Receiving notices earlier would be better.
99-0783	I was unable to get enough information to view this material, i.e. times, dates, etc.
99-0277	We have determined that this program is not appropriate for our fourth grade students.
99-0448	Need to be more informative about the dates that the program is aired.
99-1159	I have not received anything that lets me know when and how to use this to the best of my knowledge.
99-0642	Great program, but occasionally too difficult for my fourth graders to follow.
99-0319	We will not be using your program any longer. Everything we do must pertain to SOL's. So our principal won't approve us watching your program any longer, since it doesn't pertain to SOL's. Also, no offense, but we only watched the first show and the students were extremely bored.
99-0097	You should broadcast the program more than one time. If you could show it again late night for video taping, it would be helpful.
99-0442	It would be helpful to have program air dates on the curriculum packet and to receive materials sooner. Often I get them the day before or the day of the broadcast.
99-0149	I have taped programs for our teachers, but we have not been able to include them in the curriculum as I had thought. Since the materials are not being used at the present time, please do not send until I see an interest for them in our school.
99-0302	Most of this year's lessons are beyond the class I have this year.
99-1824	I found the materials very interesting; however, many of the activities are too involved or too difficult for fourth graders.
99-1463	I have found that most of the information and activities are either too advanced or don't fit well with our curriculum. I have passed most of the packets on to other teachers. Thanks.

Table D1. Concluded

ID number	Comment
99-1752	Time pressures on teachers are overwhelming - all materials need to be easy to glance at so I can see how to use them. Often, teachers need to modify materials to fit exact objectives in the classroom. Good materials - thanks.
99-2393	I was pleased to receive the NASA information. However, I was in the middle of another unit when the materials arrived. I will need to do some planning to fit this into my existing curriculum. I will probably use it next year more. The material is difficult and will have limited use for 5th grade.
99-0390	Teachers report mixed feelings. One class is not finding time to incorporate into the curriculum.
99-0276	Please discontinue. I have not been able to use the program.
99-1494	Material is a little difficult for my 4th graders.

Appendix E

Table E1. Technical Difficulties

ID number	Comment
99-0025	Often difficult to arrange taping from satellite - is there an alternative method to receive video?
99-0839	Are the videos available through NASA? The Teacher Resource Room? I did review the last video which was taped by my school district. It was not a good taping but I wasn't sure if the problem was at this end or from the source. My curriculum is a little strange so I am uncertain how I will use NASA CONNECT.
99-0705	I received the first two packets after it was aired and I didn't tape it. I missed the third one due to being away to help my mother from surgery. Is it possible to receive these tapes from you? How much would it cost? I do like the setup of your information you have sent. Thank you very much!
99-0548	We have been unable to view this over the TV. We have passed this concern on to Dr. Edwards at FSU. Are there any solutions - i.e. ways to connect?
99-3077	We cannot internet from our school as yet but most students and myself have this capability in our homes. Students will be given the e-mail for their extension at home. At present, I see this extra home computer time as possible extra credit and challenge activities.
99-0841	Two of the programs never aired here as scheduled. Will there be any way to get tapes of the programs even though Internet activities will no longer be available?
99-0759	Although we've been receiving mailings since fall, our viewing (we've been told) is contingent on Comm. Public Television this spring.
99-0347	I may have to videotape the program occasionally.
99-1080	We missed the program broadcast 12-21-98. Is there any way to get a copy?
99-3216	My concern is getting the programs. I have asked our media center for help since the programming is on channels unavailable to me at home. They are not certain we have the equipment to tape. Is it possible to purchase tapes?
99-3426	Have missed first programs - can I get copies of tapes?
99-3425	Could we please have copies of the video presentation as we received this too late to tape them all and we would love to have the videos. I will pay for tapes and shipping if necessary. Help! Thanks!
99-0861	Everything we've used is great. Time zone differences make live participation impossible. How about a delayed time? 12:00 for you would be 9:00 for us - Perfect!
99-0539	We are having difficulty in finding the program televised. Our media specialist said there is a different program televised in our area. Suggestions?
99-0540	Cannot access the program because our local public TV channel does not carry it.
99-0549	Could not access the CONNECT program on public TV Channel because our local TV channel does not carry it.
99-1450	We have called to find out how to connect with TV but to no avail. Please help. Thank you.
99-2094	I missed taping the first programs in the series - Plane Weather. Will it be repeated? Great programs. Thanks for making them available to us.
99-1658	I have not received any information on when to tape my programs.
99-0964	My computers are down more often than they are up and our e-mail has yet to work. I greatly appreciate things sent in the mail.
99-1451	Sometimes we have problems getting the programs. We are such a small school that funds are limited for the purchase of videos.
99-0853	We do not have access to satellite, so we are not able to view the program. We would like to tape the programs. We were told the tapes could be purchased, however no information has been received about the cost of the tapes or how they can be ordered.
99-2863	We would like to receive our information by mail because we have had technical difficulties with our e-mail this year. Thanks for your prompt response.

Table E1. Concluded

ID number	Comment
99-2904	I have not received the materials for episode 1 (Plane Weather) and episode 5 (Quieting the Skies). They may be stuck in the mail somewhere!
99-2925	I may have registered too late in the school year to use the materials this year. Our school year ends May 28th. I am not sure which channel to use to record the programs or the dates on which they are aired. Is it possible to record programs that have been previously aired? Also, I didn't receive the lesson for program 1.
99-1446	Since we have limited availability to view the programs due to scheduling in the media center (we don't have access in our classrooms), we wondered if VCR tapes are available that we could use. We've integrated the packet information into a space unit we're doing with our 78 students. Because of my participation in NASA's Spaceday and the web site I developed, Baldwin has been selected as a NASA Signature School? I've registerd our team for the next live NASA Cybercast. All Free Materials are greatly appreciated. We love what we have received so far. Thanks!
99-2077	I need info on where these tapes are shown. We missed the last round because we didn't know where to watch. Could we get copies of the shows (past) sent to us?
99-0095	My school cannot receive transmissions (according to librarian) because we are not on the satellite hookup needed. The guides are still helpful until, by chance, we are hooked up to the Internet or receive a dish.
99-0160	I am a TITLE I math teacher. I have worked with our fourth grade. The material is a little above their abilities, but not above their interest level. Our programs are broadcast usually a day after the live show. I missed the most recent show on February 13th. I would like to have a video tape, but have not pursued it as of yet.
99-0275	We missed 2 broadcasts due to weather and scheduling. Is there any way to get a copy of the program?
99-0435	I have had a hard time accessing NASA TV. Do you have any suggestions? What is the best way to receive it? If I can't get NASA TV, is there a way to get the video tapes?
99-0101	Good program. I have had difficulty viewing at assigned time. Video tape more useable.
99-3533	How do I link up to the program? Internet or TV? Also, have I missed any programs. I just learned about the lessons last month. May I still participate or make up missed lessons? Thanks.
99-2906	I have a concern about being able to view the program on that particular channel. The media specialist tried to tape the program for me but we don't have that channel. I would like to have the video of the programs.
99-3555	I found out that I do not have access to satellite programming. Can I obtain videotapes of the programs?
99-3633	I am concerned about taping the programs. I may not be able to do so because of limited access to the stations broadcasting.
99-1810	Will the series from the 98-99 school year be repeated? Our Educational TV satellite/cable was unable to tape all the programs.
99-1063	We got to watch the last program and even got to call in; my students loved that! Thanks! I couldn't get into the chat room though.

Appendix F

Table F1. Miscellaneous Comments

ID number	Comment
99-0438	I would prefer not giving my e-mail address - it is for personal use only.
99-1372	I would like to receive the schedule for the programs as early as August so that I can plan my lessons.
99-1816	I was not able to use the program this year, but I hope to include it in the upcoming year.
99-1982	The school I am currently at is in the process of closing. We are being consolidated with another elementary school. The number of students and faculty will increase. I have made the necessary changes on the above form.
99-0527	I need some more information on this. Please send a brochure.
99-3500	Actually, at present time I am teaching 3rd Grade bilingual, thus I thought it could be useful for my students to know about this program. I will share this with my colleagues in fourth and fifth grade. My school is starting to have computers in the classroom (at least one) connected to the Internet and looking forward to having our computer lab connected in the near future.
99-0202	Super Videos and Supplemental Worksheets. The toothpaste unit most recently was unusable in a crowded curriculum.
99-2574	I will no longer be at this school after this year but I am sure the teachers will still want the materials and service.
99-2704	Looking for some exciting ways to interest 8th grade students that are not very motivated.
99-2085	I am in the process of changing schools. However, I would like to continue receiving information.
99-2892	We are on spring break - hope this isn't too late. We will probably be using the information later this year.
99-1630	Sorry this is so late. I was out for several weeks.
99-1098	Jr. high teacher uses it.
99-1262	Received information and forwarded it on to 4th and 5th grade students.
99-2068	Could you please send me a tape of Just Plane Weather? Thanks.
99-1777	I now teach at our county juvenile detention center (still Prince William County Schools - just a different kind of classroom). We are four teachers who have one class of girls and three classes of boys. Any kind of media/model/etc. would assist us with a very demanding clientele.
99-0632	I'm trying my best to integrate this into my curriculum, but there is so little time.
99-1447	At this time our school is being wired. We should be on the Internet by June 1999, ready for the next school year.
99-1500	I have enjoyed the program this year, but I am changing grade levels for next year and probably will not be able to use information. Thanks.
99-3569	I am really hoping to implement parts of this program next year. We are losing our technology company and are searching for a replacement for technology, programming, and materials.
99-2799	Hope this is a valuable program. Thanks for the resources.
99-2062	Loved what we have completed so far. Our curriculum is changing and I will work this summer to incorporate these materials into the science-math program for 1999–2000. I don't know if you need this or not: Total students (529), Male (290), Female (239), White (38%), Black (60%), Other (2%), Title I school.
99-2692	Our concern would be getting the necessary supplies and equipment for the students to perform the experiments.
99-2794	I am the department chair person for 11 middle school science teachers. I cannot use all of the material, but I intend to share.
99-1464	I am just beginning to use the information in my classroom and with my young astronauts.
99-2826	I am a 7th grade math teacher, but I will be working with an 8th grade science teacher on the "sound" unit.
99-2791	Can you remind me when your videos are on TV so that I can tape them?

Table F1. Concluded

ID number	Comment
99-1288	We are always short of funds so I selected U.S. mail. If this is problem for you, I can download. Thanks for the program opportunity.
99-1376	Parents are involved in taping programs for use later in the school years. Science teacher was informed of dates and times for live viewing.
99-1286	We plan to use these programs later in the school year.
99-1039	I have changed jobs and am no longer in the classroom. So at this point we should cancel the subscription. Thank you.
99-1030	If you have any 8' × 10' glossy photos of recent Space Shuttle missions, please send some of them.
99-0695	Another teacher and myself have primarily used parts of lessons with our Science Olympiad Team.
99-0580	I have passed the information on to the classroom teachers.
99-0378	I do not actually use the materials. The teachers use it in their classroom.
99-0005	I like the items available for purchase. It helps when I have no textbook information on space to have help from other sources. Thank you.
99-1071	I am currently teaching Language Arts. I have a few students who are highly interested in flight and space. I have prompted these students to watch the lessons in their own time.
99-0391	I've not had the time I thought I would to take advantage of this program. I'd like to continue to try though!
99-0166	Your programs are utilized by our science specialist.
99-0311	I am still working on trying to get everything coordinated.
99-0155	We received a duplicate shipment of the teacher materials.
99-0684	A NASA Challenge Center is being developed in our area, so we are very interested in your program! Thank you for including us.
99-0394	I am retiring at the end of this school year. You probably won't need this info.
99-0643	Used this year's tapes as part of my rocketry club. Disseminated extra packets, topics, to other teachers at other schools.
99-0583	We would like to schedule a visit to your site.
99-0036	I teach 6th graders with emotional disabilities. Most of their reading abilities are at 2nd or 3rd grade. Thanks for sending the material, but most of the time it is too hard for my students. You do not need to send packets anymore.
99-1801	We record selected programs (in particular programs relating to oceanography and satellite imaging) and keep them in our marine education center for viewing by teachers, faculty, and staff.
99-2746	I am very interested in this area of study and hope to be able to arrange a field trip to NASA next year.
99-1679	I teach 6th grade. Plan to use materials with 6th grade science teachers. We work together.
99-0495	Please send any updates for 1999–2000. I am trying to get the media center to tape programs.
99-2697	Is there a method to tape programs that were missed during the 1998–1999 school year?
99-1267	This sounds really interesting!!
99-1569	Since I haven't used these materials before, I am not sure about how I will use them.
99-1045	Due to many changes in our school, I have been unable to incorporate this into my classes this year. You may wish to take my name off of your list, as I won't be teaching here next year!
99-1969	With Marshall Flight Center 5 miles from our school, NASA is a big part of our lives.
99-0444	This program was used as a supplement for our Gifted and Talented curriculum. We also plan to use this in the 5th grade next school term.
99-3512	I would be interested in obtaining materials that I can tie into my curriculum.
99-3529	I would be interested in knowing how other teachers are using this material in class.
99-3507	Looks like a great program. Because it is late in the year, they may not be used until the fall semester.
99-3622	I am the T-STAR coordinator for our school district and this is how I found out about your program.

Appendix G

Table G1. Tribal School Comments

ID number	Comment
NA-0050	Many thanks to NASA Langley Research Center's Office of Education's support to the world of education. You are assured that your materials will benefit many of our Native American students. Thanks.
NA-0036	Scarcity of teaching tools is very common out here on the Navajo Reservation. The materials you have offered are most useful for our school.
NA-0073	Thank you. I will make this material available to teachers and students.
NA-0057	I apologize for taking so long to complete this survey. Thank you in advance for helping our schools.
NA-0058	Thank-you for contacting me! Could you send an application to my sister-in-law who is also a Native American teacher? She teaches 2nd grade in a public school on the No. Ute Reservation in Utah. Her name is Linda Vanderhoop LaPoint Elementary.
NA-0058	Send all materials so they can be utilized in the 8th grade classroom. Thank you!
NA-0173	Additional course offerings?
NA-0135	We would like any and all information you would like to share with us.
NA-0063	Thank you for your offer.
NA-0161	Please send any additional information that you might have.
NA-0053	Thank you kindly for your generous assistance.
NA-0134	Our school is wired, but not connected at this time. Our students are 100% Native American. It is K–8 with multi-level classrooms. Each room has only 18 students. We are a BIA Charter School.
NA-0095	Looking forward to trying your program in our school.
NA-0160	At present time - we are not online. We hope to have this capability within the next year.
NA-0179	I am interested to see your materials.
NA-0040	Good program! Thank you.
NA-0143	These videos sound like a great idea. I can't wait to see them.
NA-0045	I would like any and all science information available. Our school is very isolated and we do not have any internet connectivity yet. Current science information is sorely needed. Thank you in advance.
NA-0020	The teachers are very much interested in NASA CONNECT. Please send us whatever you have to offer. Thank you for letting us know of this program.
NA-0116	We look forward to enhancing and enriching our Native American students K–6 through the NASA CONNECT Math and Science Video Series.
NA-0126	Looking forward to receiving new materials, videos, and activities, to be implemented into new academic year 1999–2000.
NA-0056	We are looking forward to using NASA CONNECT in the classroom. Thank you.
NA-0159	Thank you.
NA-0103	We would like to expose students, parents, staff to technology outside the reservation. That there are other means of communication.
NA-0075	In the opening of your cover letter that I received with this application it was mentioned that the video series was being made available to Native American educators. I am interested to learn if and how the series may have been tailored to target Native American students and their cultural heritage.
NA-0090	We are an elementary school, but we have students K–8.
NA-0178	Please send the free videos and any other instructional materials. Thanks.
NA-0101	The school is 100% Native American (Navajo). There are cultural concerns, i.e., taboos, etc.
NA-0015	We would like to get materials of what you have to offer.
NA-0065	This would be an exciting addition to add to my space unit and Mars expedition. Thank you!
NA-0176	Thanks for this opportunity.
NA-0010	Look forward to receiving 4–5 and 6–8 videos and lesson materials.
NA-0185	I think this is an exciting opportunity.

Table G1. Concluded

ID number	Comment
NA-0059	Thank you for helping.
NA-0046	I am very interested in your video series, etc.
NA-0115	Do you have teacher lessons for K–3? Are the lessons developed using multiple intelligences and multicultural? Who and how were these instructional video series field tested? Looking forward to receiving this material. Thank you. Any resources available to help meet the differential education needs of my students is appreciated.
NA-0118	It would be helpful in both the classroom and with MESA.

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. AGENCY USE ONLY (Leave blank)

2. REPORT DATE
September 2000

3. REPORT TYPE AND DATES COVERED
Technical Memorandum

4. TITLE AND SUBTITLE
Evaluating the Effectiveness of the 1998–1999 NASA CONNECT Program

5. FUNDING NUMBERS
WU 332-18-10-01

6. AUTHOR(S)
Thomas E. Pinelli, Kari Lou Frank, and Patricia L. House

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
NASA Langley Research Center
Hampton, VA 23681-2199

8. PERFORMING ORGANIZATION REPORT NUMBER
L-18022

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)
National Aeronautics and Space Administration
Washington, DC 20546-0001

10. SPONSORING/MONITORING AGENCY REPORT NUMBER
NASA/TM-2000-210542

11. SUPPLEMENTARY NOTES
Pinelli: NASA Langley Research Center, Hampton, VA; Frank: NASA GSRP Participant, College of William and Mary, Williamsburg, VA; House: President, House and Associates, Virginia Beach, VA.

12a. DISTRIBUTION/AVAILABILITY STATEMENT
Unclassified-Unlimited
Subject Category 82 Distribution: Nonstandard
Availability: NASA CASI (301) 621-0390

12b. DISTRIBUTION CODE

13. ABSTRACT (Maximum 200 words)
NASA CONNECT is a standards-based, integrated mathematics, science, and technology series of 30-minute instructional distance learning (satellite and television) programs for students in grades 5–8. Each of the five programs in the 1998–1999 NASA CONNECT series included a lesson, an educator guide, a student activity or experiment, and a web-based component. In March 1999, a mail (self-reported) survey (booklet) was sent to a randomly selected sample of 1,000 NASA CONNECT registrants. A total of 401 surveys (351 usable) were received by the established cut-off date. Most survey questions employed a 5-point Likert-type response scale. Survey topics included (1) instructional technology and teaching, (2) instructional programming and technology in the classroom, (3) the NASA CONNECT program, (4) classroom use of computer technology, and (5) demographics. About 68% of the respondents were female, about 88% identified "classroom teacher" as their present professional duty, about 75% worked in a public school, and about 67% held a master's degree or master's equivalency. Regarding NASA CONNECT, respondents reported that (1) they used the five programs in the 1998–1999 NASA CONNECT series; (2) the stated objectives for each program were met (4.49); (3) the programs were aligned with the national mathematics, science, and technology standards (4.61); (4) program content was developmentally appropriate for grade level (4.25); and (5) the programs in the 1998–1999 NASA CONNECT series enhanced/enriched the teaching of mathematics, science, and technology (4.45).

14. SUBJECT TERMS
Distance learning; Program assessment; NASA CONNECT; NASA educational programs; Mail survey

15. NUMBER OF PAGES
53

16. PRICE CODE
A04

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
Unclassified	Unclassified	Unclassified	UL